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TRAINING CENTRE

CENTUM VP Operation Course Textbook

Student Training Textbook

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COURSE : CENTUM VP OPERATION
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This document is maintained by : **Wendy Kok** Initial: *Wendy Kok* Date: September 2008

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* - Denotes the release no. of the software corresponding to the contents of this instruction manual. The revised contents are valid until the next edition is issued.

COURSE OUTLINE

OBJECTIVE : This course is designed to give participants the fundamental knowledge on the operation and monitoring functions of the CENTUM VP system.

DURATION : 3 days

PARTICIPANTS : For operators, plant operation specialists and engineers who need to operate the CENTUM VP system.

PREREQUISITE : Participants should have some basic knowledge on process measurement and control.

COURSE CONTENTS :

DAY 1

Centum VP System Overview
Centum VP Hardware Description
Window Panel Operation Part I
- Browser Bar
- System Message Banner
- Consolidated Alarm Management Software for Human Interface Station (optional)

DAY 2

Window Panel Operation Part II
- Trend View
- Regulatory Control Function
  - Tuning View of Function Block
- Sequential Control Function

DAY 3

Window Panel Operation Part III
- Process/Historical Report
- System Status Display
- HIS Setup

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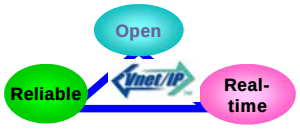
1. OVERVIEW OF VNET/IP NETWORK



Vnet/IP achieves a high-speed control network while conforms to the IEEE802.3 and TCP/IP communication standards. It is designed as a duplexed network; it conducts open communication using two communication systems of bus 1 and bus 2, and the various standard protocols of control communication and Ethernet. When configuring a network, it can use commercially available Ethernet communication devices.

1.1. Network Conforming to IEEE802.3 and TCP/IP

Vnet/IP is a network that conforms to the IEEE802.3 and TCP/IP communication standards. It supports a transmission speed of 1 Gbps or 100 Mbps. It has two independent communication paths, control communication and open communication.
Control communication is the communication for transferring control data. Open communication is the communication conducted by using the various standard protocols of Ethernet.
As for the hardware of a Vnet/IP network, such as transmission media (Ethernet cables), layer 2 switches, layer 3 switches and routers, commercially available general-purpose communication devices can be used.

System Components of Vnet/IP Network

The following describes the system components of a Vnet/IP network.
The typical system configuration is shown below.

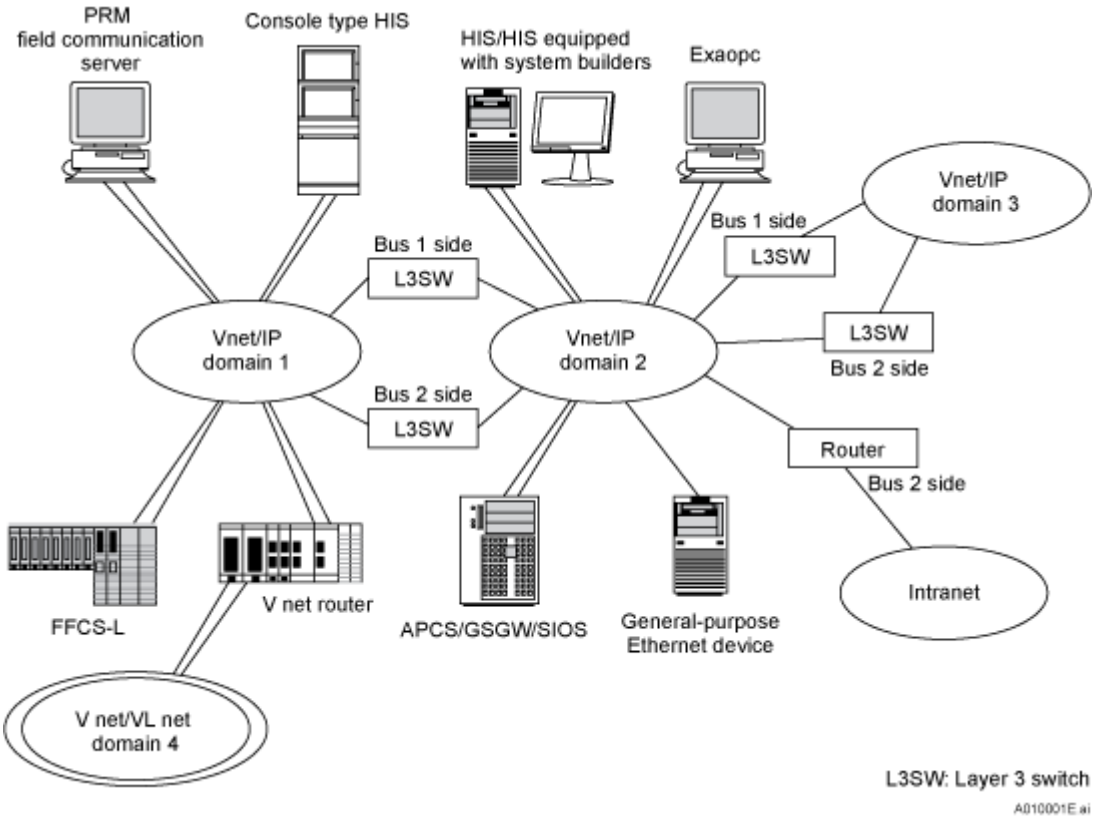


Figure: System Components of Vnet/IP Network

Vnet/IP Domain
A Vnet/IP domain consists of two independent subnets of bus 1 and bus 2. In the CENTUM VP, combining Vnet/IP and V net/VL net domains, up to 16 domains can be set.
To each domain, up to 64 Vnet/IP stations and up to 124 other general-purpose Ethernet communication devices (PCs, routers, etc.) can be connected.

Layer 3 Switch
A layer 3 switch is used to connect between Vnet/IP domains in each bus.

Router
A router with Security function to ensure the security of a Vnet/IP network is used to connect the bus 2 side with an external network such as Intranet.

Vnet/IP Station
A Vnet/IP station in a domain is connected to a layer 2 switch in each bus. The following table shows a list of Vnet/IP stations.
Moreover, the safety control stations (Vnet/IP) of ProSafe-RS system can also be connected on a Vnet/IP network.

Table: List of Vnet/IP Stations

Name	Hardware
HIS: Operation and monitoring station	General-purpose PC + VI701, Console type HIS
FFCS-L: Control station	AFV10S/AFV10D
APCS: Advanced process control station	General-purpose PC + VI701
GSGW: Generic subsystem gateway	
SIOS: System Integration OPC Station	
Exaopc	
PRM: Field communication server	
V net router (duplexed V net/VL net, single V net/VL net)	AVR10D

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•FFCS-L
This is a control station connected to Vnet/IP. The FFCS-L can connect up to 3 FIO type I/O nodes as standard. In this case, the total number of nodes is 4 including an FCU.
Furthermore, by adding the Application Capacity Expansion Package, up to 15 I/O nodes can be connected including an FCU. Only the FFCS-L can be connected to Vnet/IP as a control station.

•General-Purpose PC + VI701 Card
A Vnet/IP station is connected to a Vnet/IP network by installing a VI701 card if a Vnet/IP station uses a general-purpose PC as its platform. The VI701 card contains two ports of connectors to connect Vnet/IP communication cables to support duplexed Vnet/IP buses.

•V net Router
The V net router is the hardware dedicated to connect a Vnet/IP domain and a V net/VL net domain. It can also connect the V net domain of the CENTUM CS. It performs the frame conversion and filtering between Vnet/IP and V net/VL net.

Compatibility between Vnet/IP and V net
The upper protocol of the control communication of Vnet/IP is compatible with V net. Therefore, a Vnet/IP station connected to Vnet/IP and a V net station connected to V net can communicate with each other via a V net router. Also, a station that uses a PC such as an HIS as its platform can connect to Vnet/IP by replacing the communication interface with a Vnet/IP interface card (VI701).

Connecting Control Buses Prior to the CENTUM CS
Control buses prior to the CENTUM CS (HF bus, RL bus) cannot be connected directly to a Vnet/IP domain. To connect these control buses to Vnet/IP, it must go through a bus converter (BCV-H, BCV-L) of V net connected via a V net router.

Connecting General-Purpose Ethernet Devices
General-purpose Ethernet devices are connected to the bus 2 side of Vnet/IP.
To connect Vnet/IP with an external network such as an Intranet, separate the network using a general-purpose router.

1.2. Vnet./IP Network Connections

This chapter describes the various connections to configure a Vnet/IP network and the communication status of the control bus.
•Connection of devices in a Vnet/IP domain
•Connection between Vnet/IP domains
•Bus status of Vnet/IP
•Connection with other control bus domain

Outline of Vnet/IP Network Connections
An overview of Vnet/IP network connection in the CENTUM VP is shown below.

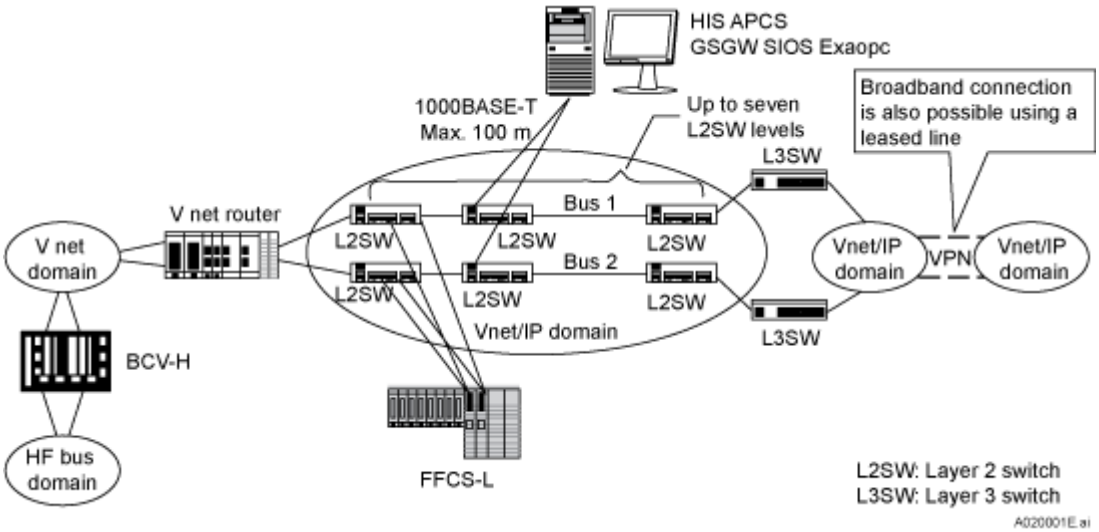

Figure: Outline of Network System Elements Connections

1.3. Specification when connecting Devices in a Vnet/IP Domain

Number of Vnet/IP stations connected:	
Vnet/IP stations including Vnet router	Max. 64 units
Other general-purpose Ethernet communication devices (PCs, routers, etc.):	Max, 124 units
Levels of layer 2 switches:	Max 7 levels
Distance between layer 2 switch and station:	Max. 100m (when UTP is used)
Connection distance between layer 2 switches:	Max. 5 km (when optical fiber cable is used)

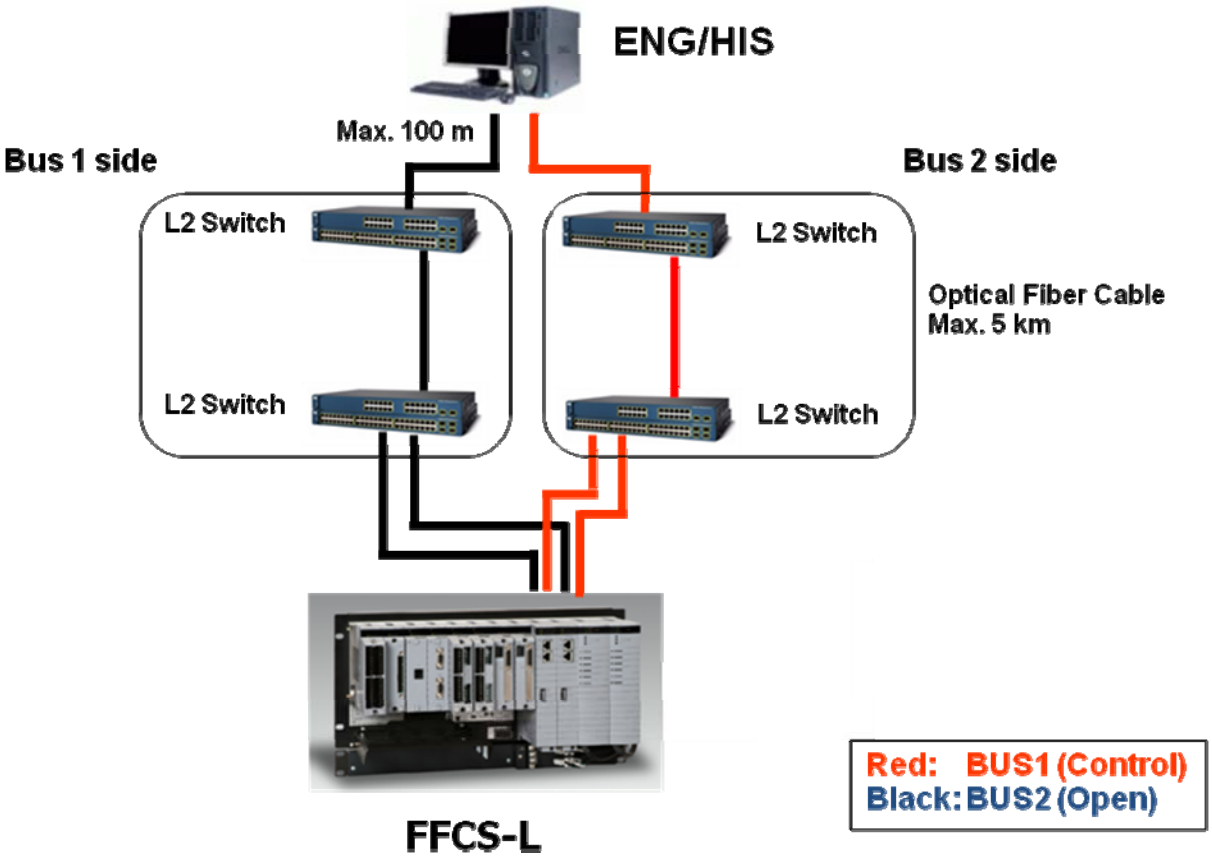

Figure: Connection Example of Devices in a Vnet/IP Domain

1.4. Specification when Connecting between Vnet/IP Domains

The specification of connection between Vnet/IP domains is as follows:
•Multi-level connection of Vnet/IP domains: Max. 15 levels (16 layers)
•Transmission delay between any domains: 250 msec or less

Connection between Vnet/IP Domains
There are three types of connections between Vnet/IP domains: bi-directional, hierarchical and bridge connections. It is possible to configure a network coexisting these three types of connections. Set the connection types in Domain Properties for each domain.

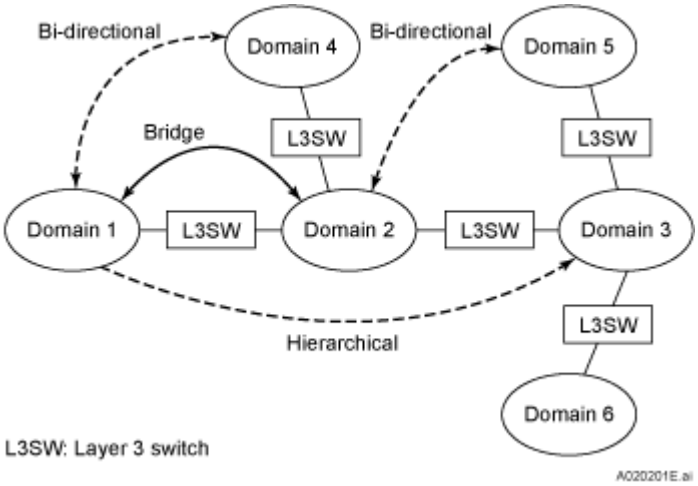

Figure: Domain Connection Types in Vnet/IP

Bi-Directional Connection
This connection type does not differentiate the upper and lower relationships between Vnet/IP domains. This type of connection can be established by setting the domain to receive FCS messages, HIS messages and FCS TCP communication frames from another domain.
Note that the default settings of all domains are this type.

Hierarchical Connection
This connection type differentiates the upper and lower relationships between Vnet/IP domains. This type of connection can be established by setting the lower domain not to receive FCS messages, HIS messages and FCS TCP communication frames from the upper domain; but the upper domain can receive them from the lower domain.

Bridge Connection
This connection type guarantees the independence of a domain. This type of connection can be established by setting the domain not to receive FCS messages, HIS messages and FCS TCP communication frames from another domain and by setting the time group to “0” so as not to perform time synchronization.

2. OPERATION AND MONITORING WINDOWS

2.1. Display Layout of HIS

The display of CENTUM VP HIS consists of the System Message Banner, Browser Bar, and HIS Desktop Area.

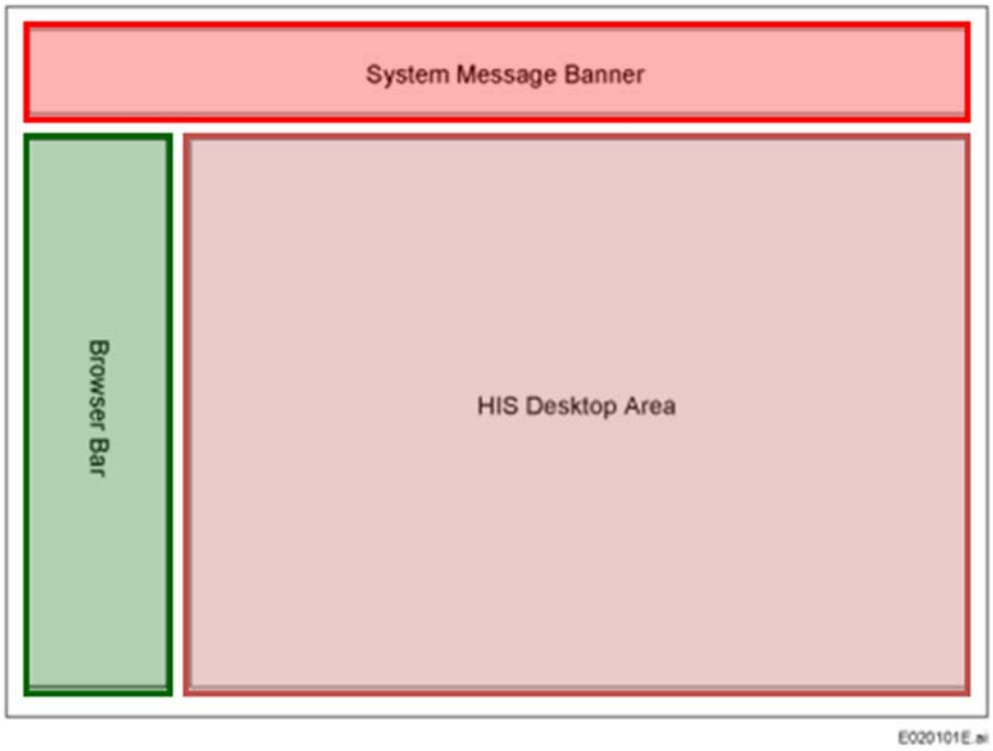

Figure Display Layout of CENTUM VP HIS

System Message Banner

The System Message Banner is always displayed at the top of the screen, and shows the operator whether any alarms have occurred in the plant. In addition to showing the alarm occurrence status, it also calls up message-related operation and monitoring windows via button operation.

No window can overlap the System Message Banner.

Browser Bar

The Browser Bar is displayed in the left or right side of the screen, and has the role as the launcher to call up various operation and monitoring windows. It also helps the user to have a general view of the system by showing the tree structures of the operation and monitoring windows and the plant organization.

Browser Bar can be minimized on the edge of the screen, and be opened for use when it is needed.

HIS Desktop Area

Views and windows for operation and monitoring of the plant are shown in this area.

The HIS Desktop area differs as shown below in accordance with the display style of the Browser Bar.

This difference should be noted in specifying the coordinates of window call position and in the explanation of the window display size.

2.2. Display Elements of HIS Desktop Area

The HIS Desktop area displays various operation and monitoring windows.
The operation and monitoring windows of CENTUM VP have names of "... view" or "... window"; the windows named as "... view" are displayed as part of a Container Window or Pop-Up Window described later and the windows named as "... window" are displayed independently of Container Windows and Pop-Up Windows.

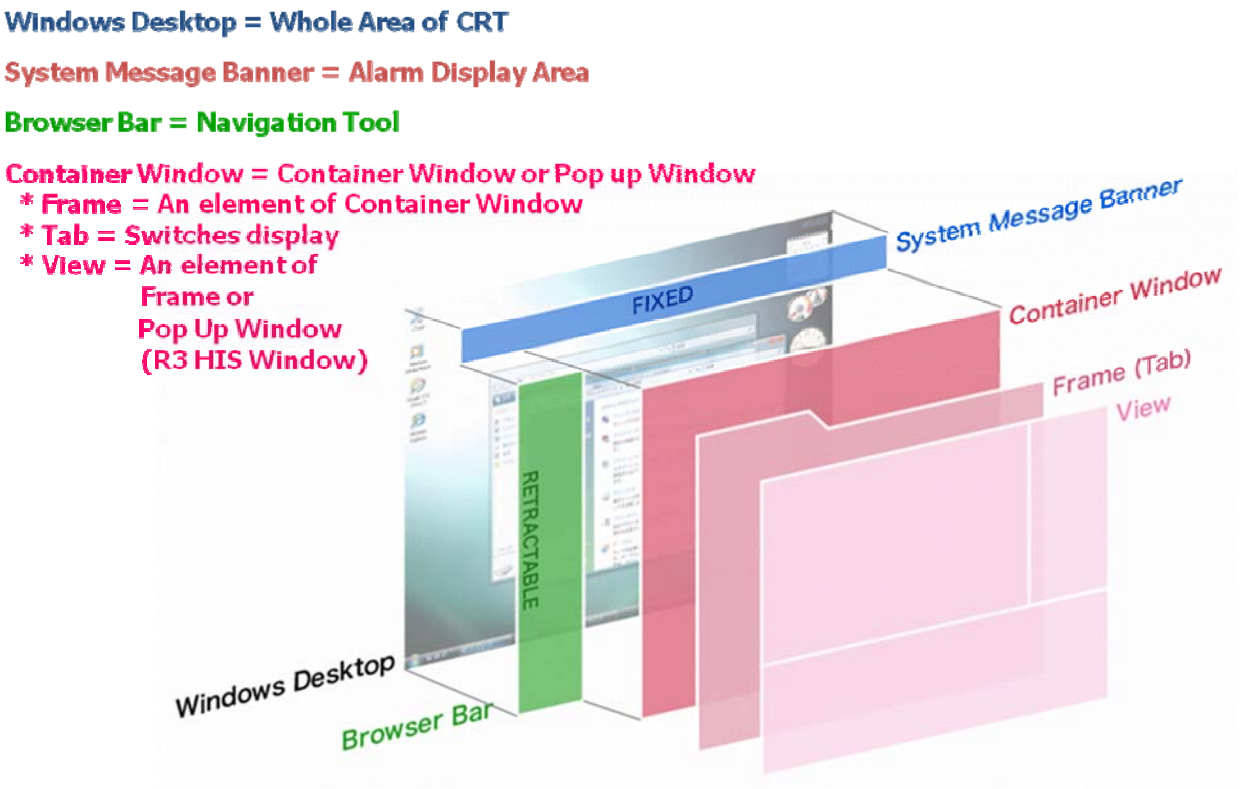

Figure : Display Elements of HIS Desktop

Container Window
The Container Window is an outermost structure of the HIS display and acts as a "board" to mount display elements (view) for display. In CENTUM VP HIS, several views can be combined according to the purpose and displayed together in the Container Window.

Frame
A Frame offers a framework to arrange several views for a certain function or purpose to allow effective operation. A frame is placed in a Container Window. Views can be called up onto the screen of HIS in frame units.
In the full-screen mode, several frames can be called up in the Container Window as overlapping tabs.
In the window mode, a single view is displayed in a Container Window having only one frame.

View
A view is a component displayed in a Container Window or a Pop-Up Window, which is described later. In CENTUM VP, the majority of operation and monitoring windows in the conventional models are handled as views.
Views are arranged in a frame for display. In the full-screen mode, up to four views can be arranged in one frame. The views can freely change their size within the frame. If the size of a certain view is changed, the sizes of the surrounding views are also changed. (The display size can be fixed.)

Pop-Up Window
Like a Container Window, a Pop-Up Window also acts as a "board" to mount a view. Pop-Up Windows are only displayed in the full-screen mode and display only one view.
Since Pop-Up Windows are always displayed in the front of the Container Window, they will not be hidden even if the Container Window is operated.
The views displayed as a Pop-Up Window are as follows:

- •Faceplate Views
- •Views called up with the size specification "-SM" or "-SC" in full-screen mode

Up to four Pop-Up Windows can be displayed on one monitor. In the initial state, however, two Pop-Up Windows can be displayed on one monitor. If the third Pop-Up Window is called up, the least operated one closes.

Other Windows
These are the operation and monitoring windows not classified as Views. These windows are not displayed in Container Windows or Pop-Up Windows.
In multiple-monitor environment, these windows can be dragged across monitors but cannot be shifted or exchanged between monitors. In addition, these windows cannot be transferred to another HIS.
The operation and monitoring windows are classified into Views and Windows as shown in the following table.

Table: Classification of Operation and Monitoring Windows (List of Views/Windows)

View/Window	Function Category	Name
View	Basic Operation and Monitoring	Graphic View
		Trend View
		Trend Point View
		Process Alarm View
		System Alarm View
		Operator Guide View
		CAMS for HIS Message Monitor View
	Control Status Display	Tuning View
		Faceplate View
		Custom Faceplate View
		Control Drawing View
		Sequence Table View
		Logic Chart View
		SFC View
		SEBOL View
		SEBOL Detail View
	System Status Display	Process Report View
		System Status Overview View
		HIS Status Display View
		FCS Status Display View
		BCV Status Display View
	Batch Management Display	Product Overview
		Product Control View
		Recipe Procedure View
		Unit recipe Procedure View
Window		Message Monitor Window
		Image Window
		HIS Setup Window
		Historical Message Report Window
		Help Window
		Individual Process Alarm Message Acknowledgment Window
		Individual System Alarm Message Acknowledgment window
		Individual Operator Guide Acknowledgment Window
		Advanced Alarm Filter Window
		CAMS for HIS Historical Viewer
		Device Viewer

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2.3. Operation Screen Mode

Two types of operation screen modes are provided:

Full-Screen Mode
In this mode, the operation and monitoring windows are displayed over the entire screen.

Window Mode
In this mode, all operation and monitoring windows are displayed in the same cascade view format as the Windows.

Switching the Operation Screen Mode
Switching between the full-screen mode and window mode is done in the HIS Setup window. When the operation screen mode has been changed, the new operation screen mode takes effect after the HIS is restarted.

Operation and Monitoring Windows in Full-Screen Mode
In the full-screen mode, one container window is displayed over the entire HIS desktop area. This container window is called "primary window."
In addition to those displayed in the primary window, operation and monitoring windows can also be displayed as pop-up windows.

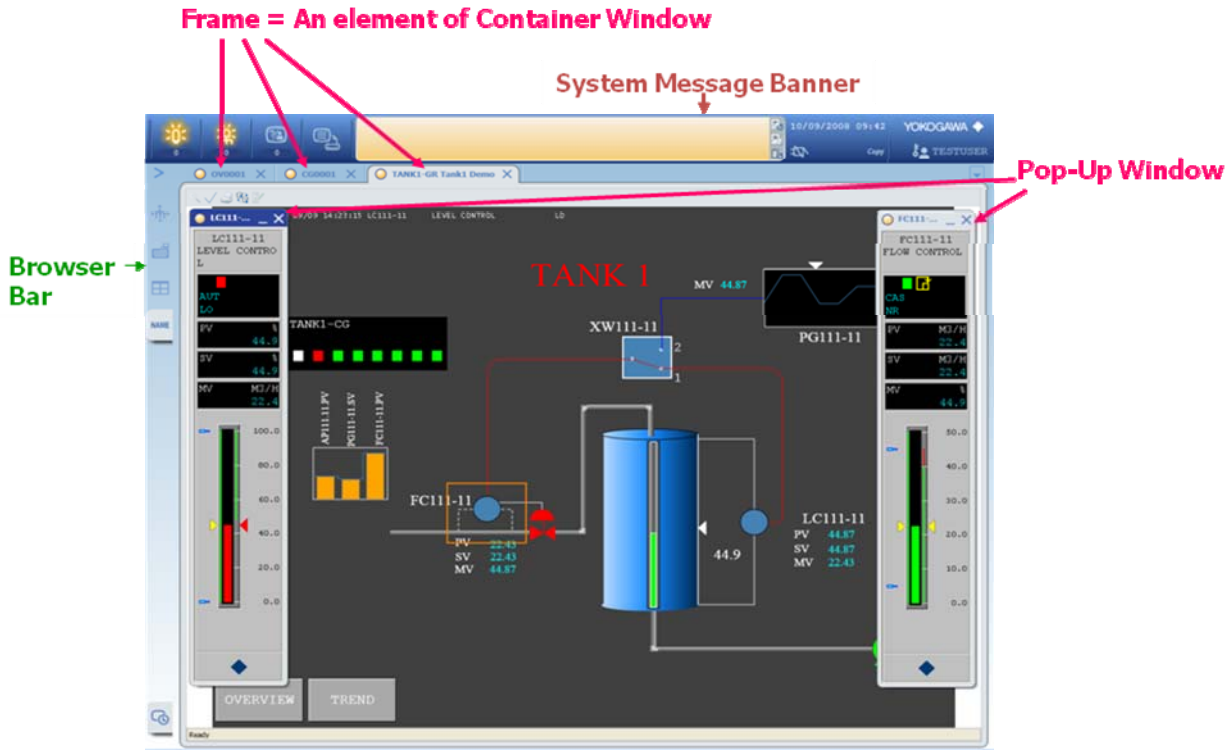


Figure: Display in Full-Screen Mode

Primary Window
The primary window is a container window that is displayed over the HIS desktop area.
The primary window can have up to five frames (*1), each of which can be shown by clicking their respective tabs.
When an operation and monitoring window is called up with "-SL" (large size) specified, a new tab is added in the primary window, showing the window in full size.
The operation and monitoring windows classified as system windows(*2) are also displayed in full size if they are called up without specifying the size.

*1:The number of displayable frames can be set in the display tab of the HIS Setup Window. The default is 3.
*2:The Faceplate View and the Help Window are excluded.

Pop-Up Window
In the full-screen mode, operation and monitoring windows can be displayed in the foreground of the primary window as pop-up windows. A pop-up window displays one operation and monitoring window.
When the pop-up windows are overlapping, they can be operated in the same way as overlapping windows are handled on Windows. However, pop-up windows displaying a faceplate view cannot be maximized.
The views displayed as a pop-up window are as follows:

- •Faceplate Views
- •Views called up with the size specification "-SM" (medium size) or "-SC" (special size) in full-screen mode

Number of Operation and Monitoring Windows Displayed in the Full-Screen Mode
The number of operation and monitoring windows displayable in one monitor in the full-screen mode can be set in the HIS Setup Window.

- •Number of Container Windows: 1 fixed (primary window)
- •Number of Pop-Up Windows: 1 - 4 (2 by default)
- •Number of frames: 1 - 5 (3 by default)

When the tabs of the set number of frames have already been displayed in the primary window, the least operated frame will be deleted if another operation and monitoring window is newly called up with the large size. Up to two pop-up windows can be displayed in one monitor by default. The least operated pop-up window will be deleted when the third one is called up.
If there is any window you do not want to delete even when the number of displayable windows has reached, you can use "priority display" function to prevent the automatic deletion.

The System Message Banner and the Browser Bar are always displayed.

Display Mode of Faceplate
According to the setting of the check box of "Enable Faceplate Frame by default" in the Display tab of the HIS Setup Window, the display of the faceplates called up from a Graphic View, Trend View, or Process Alarm View in the primary window will be as follows:

- Check box selected: The called up faceplate is always embedded in the right edge of the primary window.
- Check box not selected: The called up faceplate is displayed as a pop-up window.

Here, the operation to call up the faceplate means to double-click the part having tag information on the view (for instance, a line of alarm message in the process alarm view), or to select the tag name shown in the first line of the right-click menu. When "Faceplate" is selected from the right-click menu, the faceplate is always shown as pop-up display.

Operation and Monitoring Windows in Window Mode
In the window mode, up to 5 container windows are displayed in Windows-based overlapping style. Each container window displays only one view. The operation and monitoring windows are maximized, minimized, closed, in the same manner as the general Windows applications.

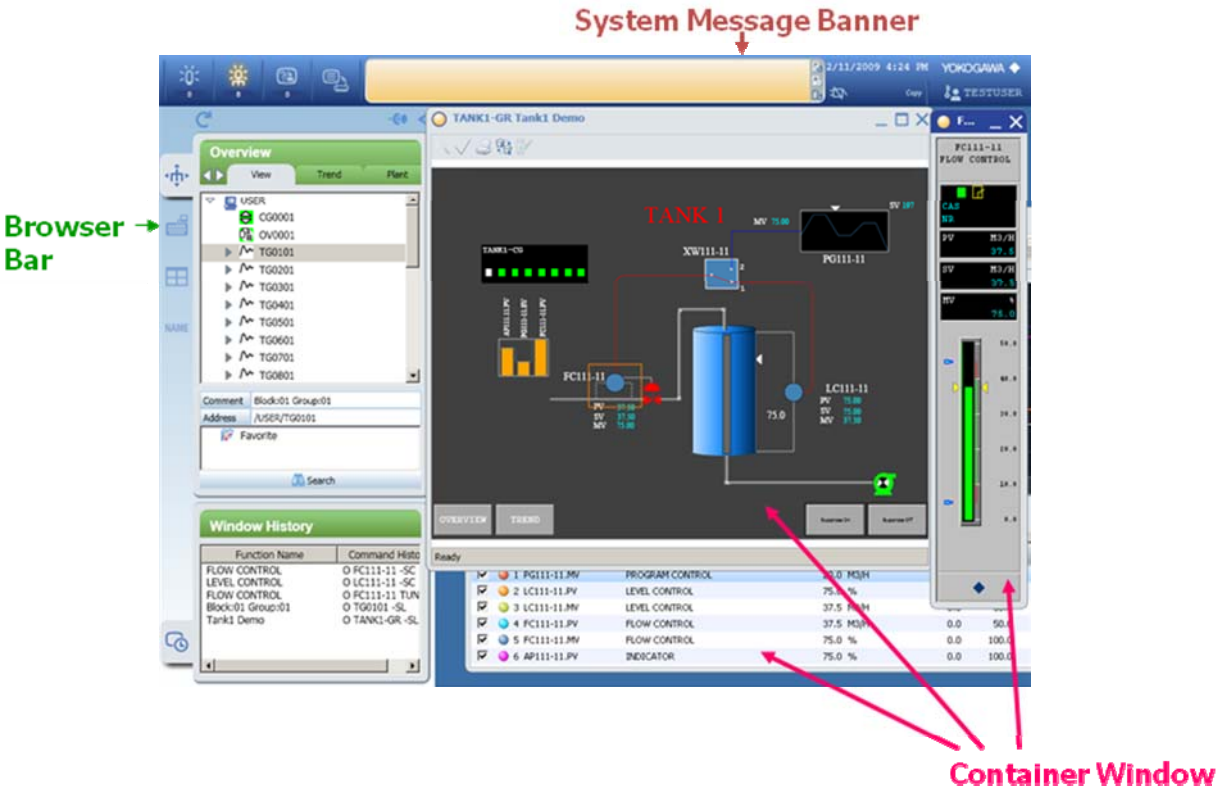


Figure: Display in Window Mode

Number of Operation and Monitoring Windows Displayed in Window Mode
The number of container windows displayed on one monitor in the window mode can be set in the HIS Setup Window. Each container window displays only one view.
Number of Container Windows: 1 - 5 (5 by default)
When the set number of container windows has already been displayed (minimized windows are included), the least operated container window will be deleted if another operation and monitoring window is newly called up. If there is any window you do not want to delete even when the number of displayable windows has reached, you can use "priority display" function to prevent the automatic deletion.

The System Message Banner and the Browser Bar are always displayed.

2.4. System Windows and User-Defined Windows

The operation and monitoring windows include system windows, which are provided by the system, and user-defined windows whose applications and display contents can be defined as desired at system generation.

System Windows
The operation and monitoring windows that are provided by the system are called "system windows."
The system windows are shown below.

Tuning View
Displays the process data status of the function blocks in detail. This view is used not only for monitoring but also for changing the setting of parameters.

Faceplate View
Displays the instrument faceplate that indicates the control status of the function blocks.

Operator Guide View
Displays the generated operator guide messages sequentially, starting from the latest one.

Process Alarm View
Displays the generated process alarms sequentially, starting from the latest one.

Advanced Alarm Filter Window
On this window, the filter rules for filtering process alarms and operator guide messages can be set or released.
To use this window, Advanced Alarm Filter package is required.

Message Monitor Window
Displays messages including operation record messages in a time-series manner.

SFC View
Displays the execution status of the SFC. This view is used not only to monitor the operation but also to call up a view that displays the details of each step of a process, or to pause the control process to jump to other process steps.
It can be also used to call up a SEBOL window that displays the execution status of the SEBOL program.

Logic Chart View
Displays condition states in a logic chart.

Sequence Table View
Displays the detailed setting content and execution status of the sequence table.

Control Drawing View
Displays the control and connection states of function blocks.

Help Window
Displays the help messages. There are 2 kinds of messages: system-fixed help messages and user-defined help messages.

Process Report View
Displays a list of process status, such as the status of the function blocks and contact inputs/outputs.

Historical Message Report Window
Displays the process alarms and system alarm messages as well as operation logs of the operators.

System Maintenance Windows
These are the Views and Windows used for system maintenance and management.

•HIS Setup Window
Displays the station information on the HIS and changes its action settings.

•System Status Overview View
Displays an overview of the status of the stations that comprise the system.

•System Alarm View
Displays an overview list of the system alarm messages.

•FCS Status Display View
Displays an overview list of the control station information, configuration and status of the hardware, and status of control buses. This view can be used not only to monitor the status, but to execute operation commands with respect to the control station as well.

•BCV Status Display View
Displays the operation status of the bus converter and the status of control bus. In this view, the running condition of the linked domain can be displayed and the operation command can be given to the bus converter.

•HIS Status Display View
Displays the operation status and settings of the console-type HIS. This view can be used to enable or disable the V nets and to maintain the touch panel.

•Adjust Time dialog box
Sets the date and time of the system.
The following are the station/unit status display views of the former products.
•FCU Status Display View (μ XL)
•EFCS Status Display View (CENTUM-XL)
•EFUS Status Display View (CENTUM-XL)
•CFCS Status Display View (CENTUM V)
Displays an overview list of the control station/unit hardware configuration and status, and the communication bus status. These views can be used not only to monitor the status but also to give operation commands to the control station/unit.

•FMS Status Display View (CENTUM-XL, V)
Displays an overview list of the field monitoring station hardware configuration and status, and the communication bus status. This view can be used not only to monitor the status but also to give operation commands to the field monitoring station.

Of the system windows, the Operator Guide View, Process Alarm View and System Alarm View can set the scope of messages to be displayed. For example, only the alarms associated with a specific function block can be displayed in the view

User-Defined Windows
The operation and monitoring windows whose display content can be defined as desired by the user at system generation are called "user-defined window." Since user-defined windows can be created in accordance with the target of operation and monitoring, they can play a key role in the operation and monitoring performed by the operator.
Graphic Views, Custom Faceplate Views and Trend Views can be created as "user-defined" windows.

The window type (attribute) of a new Graphic View is specified in the System View or on the Graphic Builder. The display contents of the Graphic Views and Custom Faceplate Views are defined on the Graphic Builder.

Graphic View (Graphic Attribute)
The Graphic View (graphic attribute) is used to display process data along with a process flow chart or to call up various views that are targets of operation and monitoring.
The Graphic View (graphic attribute) is the target of the calling-up operation via the graphic button in the Browser Bar or graphic key on the operation keyboard.

Graphic View (Overview Attribute)
The status display of the function blocks and calling-up various operation and monitoring windows can be assigned to the Graphic View (overview attribute).
When the Graphic View (overview attribute) is used, the overall status of the plant can be grasped at a glance.
The Graphic View (overview attribute) is a target for a Graphic view call and is a target of the calling-up operation via the overview button of the Browser Bar and via the overview key on the operation keyboard.

Graphic View (Control Attribute)
The instrument faceplate can be assigned to the Graphic View (control attribute), so the user can operate the plant while viewing the graphic image of it.
The Graphic View (control attribute) is the target for the calling-up operation via the control button in the Browser Bar and the control key on the operation keyboard.

Custom Faceplate View
This is the view of the instrument faceplate created by the user and shows the control status of function blocks.
The calling-up operation is the same as that of the faceplate view.

Trend View
The Trend View displays the trend data acquired by the HIS.
The trend data to be displayed in the Trend View are defined in the System View and Trend Acquisition Pen Assignment Builder. The assignment of the trend acquisition pens defined on the Trend Acquisition Pen Assignment Builder can be changed in the Trend View.
The Trend View is called up via the trend button in the Browser Bar or the trend key on the operation keyboard.

Trend Point View
From the Trend View, the user can call up a Trend Point View that displays one of the eight process data items assigned to the Trend View. A Trend Point View is automatically created when process data is assigned to the Trend View.

Help Window (User-defined)
In the Help Window, the help messages are displayed as a guide when the user monitors and operates the plant. There are 2 kinds of help messages: system-fixed help message and user-defined message.
The user can define help messages on the Help Message Builder. The maximum length of the definable message is 21 lines of 70 single-byte alphanumeric characters (or 35 double-byte characters).
The Help Window can be used in combination with a Graphic View, Trend View or Tuning View. For instance, if the Help message that shows the operational procedure and the overview, etc. is defined for a graphic view, the operator can display the Help window by pressing the Help button while the graphic view is displayed, and perform operation according to the message.

Shortcut Window
HIS can create a shortcut window in the window hierarchy of the user-defined window in itself. When a shortcut linked window is modified, all the shortcut windows linked to that window are automatically modified (the modification becomes valid when the window is called up again). If there is shared equipment in the plant, it is useful for creating the same view in multiple window hierarchies. The shortcut of the shortcut window cannot be created.
The shortcut window is a kind of user-defined windows. Its window type is dependent on the window type of the shortcut linked window and is counted as one user-defined window. The maximum number of the windows is dependent on that of each window-type.
When a shortcut window is called up, the content of the shortcut linked window is displayed. The window names and window comments defined for the shortcut window are displayed. Therefore the shortcut window and the shortcut linked window can be called up simultaneously.
The shortcut window can be called up in the same way as other user-defined windows. If the shortcut linked window is deleted, the shortcut window cannot be called up.

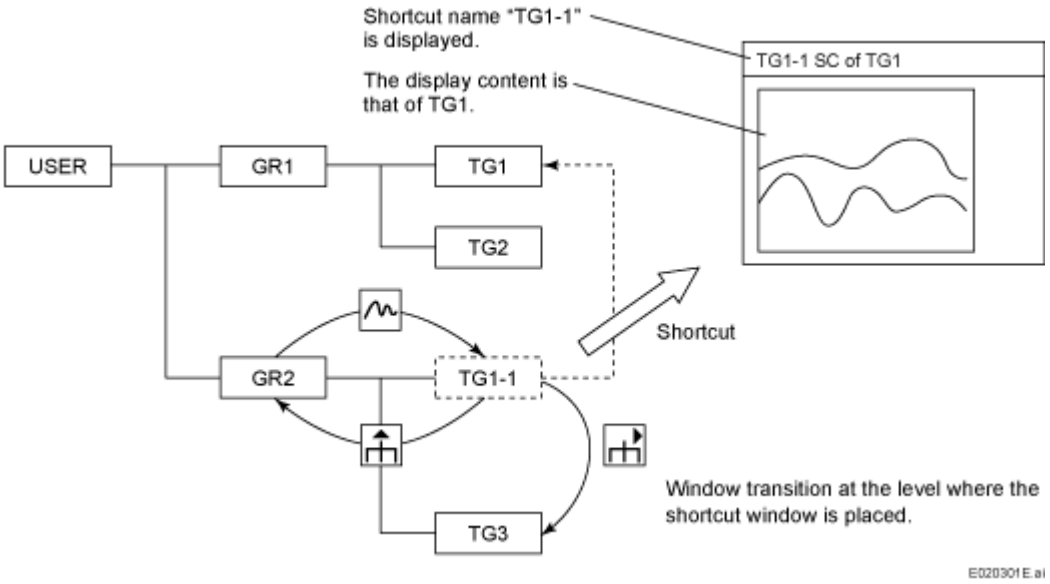


Figure: Displaying Shortcut Window

2.5. Window Hierarchy

In the HIS, the operation and monitoring windows can be organized systematically based on the concept of "window hierarchy."
The window hierarchy enables, for example, calling-up of windows at a lower level in the hierarchy from the one at the upper level; it also enables effective alarm monitoring operations.

Concept of Window Hierarchy
When a window hierarchy is used, the desired window can be called up directly without having to remember the window name. Also, the hierarchical relationship of windows can be understood visually.
For user-defined windows, a new view can be created in the folder representing a view on the System View, or a view in one folder can be moved to another folder, allowing the user to define the position within the window hierarchy as desired. There is no need to define upper and lower windows for each view. However, the system windows occupy predefined positions in the window hierarchy. Their positions in the window hierarchy are fixed.

The figure below illustrates the concept of window hierarchy. Each icon shown in the figure represents a view or a window.

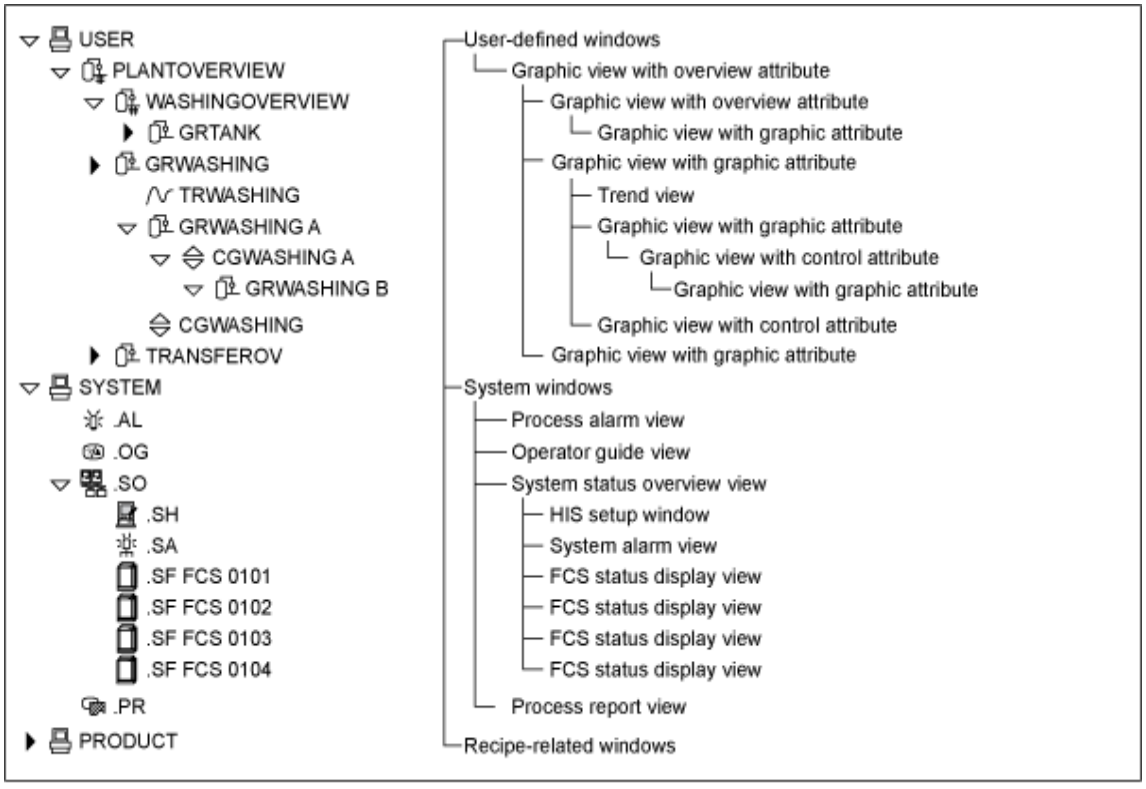


Figure : Concept of Window Hierarchy

Window Hierarchy Built for Alarm Monitoring
The overview control, which is one of the constituent elements of graphics, has functions such as process status list display, alarm status acknowledgment operation, and calling-up related windows.
By organizing the windows hierarchically using this overview control, alarm status and other information in the lower window can be consolidated in the upper Graphic view and monitored.

Therefore, the alarm status of the entire plant can be grasped at a glance in the uppermost Graphic view.
The figure below shows an example of the overview control:

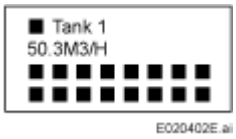


Figure: Overview Control

3. SYSTEM MESSAGE BANNER

The System Message Banner is always displayed at the top of the display, and expresses the alarm occurrence status visually. The alarm acknowledgement operation can be done promptly when an alarm occurs.

It is a window to show the operator whether any alarms have occurred in the plant. It is always displayed at the top of the HIS display, indicating the alarm occurrence status.
The alarm occurrence status is shown by colors and flashing of operation buttons, and the message display. Among the most recent process alarms and system alarms, three unacknowledged alarm messages are displayed.
When an alarm occurs, the corresponding button flashes with the buzzer sound.
The operator stops the buzzer, and can display the alarm view or the individual acknowledgment window by clicking the flashing button to acknowledge the alarm.
The same operation can be done upon generation of an operator guide message.
System Message Banner will never be hidden behind other windows, so that the user does not miss a process or system alarm even when the user is using Windows general applications.
In multiple-monitor configuration, the same System Message Banner is displayed on each monitor.

The System Message Banner is not counted in as the number of displayable operation and monitoring windows.

The figure below shows an example of the System Message Banner.

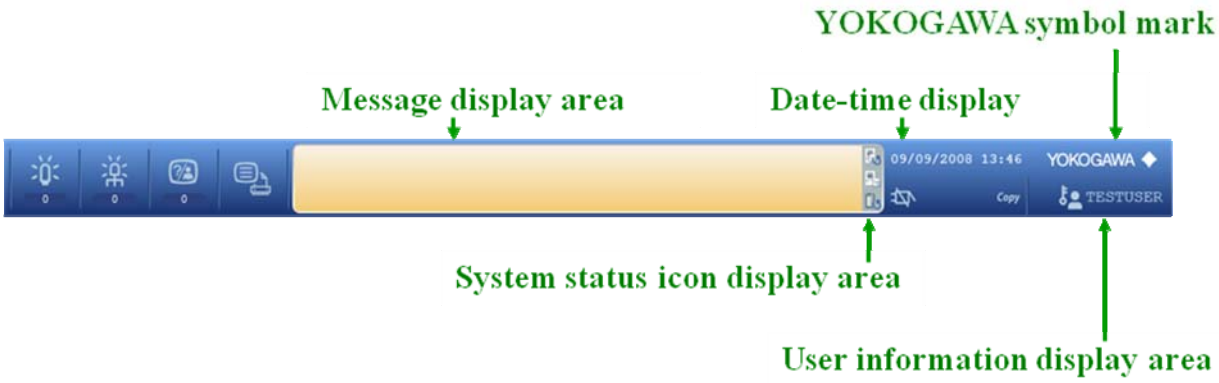


Figure: System Message Banner

3.1. Components of System Message Banner

The System Message Banner consists of operation buttons, a message display area, a system status icon display area, a date and time display area and a user information display area.

Operation Buttons

By clicking the operation buttons of System Message Banner, tasks such as calling up the operation and monitoring window or outputting the screen image to the printer or file can be performed. In addition, the occurrence status of alarms and messages is shown by flashing, ON, or OFF status of operation buttons, and the number of unacknowledged alarms.
Each operation button of the System Message Banner is shown below.

Indicates that the process alarm has occurred.
The number of unacknowledged process alarm messages is displayed in the lower part of the icon when there are unacknowledged process alarms. Clicking this button will call up the process alarm view or the individual process alarm message acknowledgment window according to the setting of [Process Alarm Mark] in the Window Switching tab of the HIS Setup Window.

The display status of the button changes as described below according to the status of the process alarm occurrence.
•Flashing in red:
Process alarm has occurred but not acknowledged yet.
•Lit in red:
Process alarm has occurred and all the alarms have been acknowledged.
•Normal color(white in blue):
No process alarm has occurred.

Indicates that the system alarm has occurred.
The number of unacknowledged system alarm messages is displayed in the lower part of the icon when there are unacknowledged system alarms. Clicking this button will call up the system alarm view or the individual system alarm message acknowledgment window according to the setting of [System Alarm Mark] in the Window Switching tab of the HIS Setup Window.

The display status of the button changes as described below according to the status of the system alarm occurrence.
•Flashing in red:
System alarm has occurred but not acknowledged yet.
•Lit in red:
System alarm has occurred and all the alarms have been acknowledged.
•Normal color (white in blue):
No system alarm has occurred.

Indicates that the operator guide message has occurred.
The number of unacknowledged operator guide messages is displayed in the lower part of the icon when there are unacknowledged operator guide messages. Clicking this button will call up the operator guide view or the individual operator guide acknowledgment window according to the setting of [Operator Guide Mark] in the Window Switching tab of the HIS Setup Window.

The display status of the button changes as indicated below according to the status of the operator guide message occurrence.
•Flashing in green:
Operator guide message has occurred but the contents have not been acknowledged.
•Lit in green:
Operator guide message has occurred and all contents have been acknowledged.
•Normal color (white in blue):
No operator guide message has occurred.

Indicates that the message registered by the user has occurred among various messages of the sequence message and the operation message, etc. This button lights up in green when there are unacknowledged messages. Clicking this button will call up the message monitor window.

Turns the buzzer off.
This button has the same function as the buzzer stop key on the operation keyboard.

Outputs the entire screen image to the printer or file.
This button has the same function as the [COPY] key on the operation keyboard.

While the CAMS for HIS (integration alarm management) is being initialized, the number of unacknowledged messages is not displayed in the lower part of each operation button for the process alarm, system alarm, and operator guide message. Clicking the button under such a condition results in an operational error, and the CAMS for HIS message monitor cannot be called up.

Message Display Area
Among the process alarm messages, annunciator messages and system alarm messages that have been generated, 3 most recent unacknowledged messages are displayed in the message display area of the System Message Banner.
Clicking the displayed message calls up the corresponding view or individual acknowledgment window.
When the CAMS for HIS is enabled, the messages via OPC are also displayed.

Process Alarm Message and the Annunciator Message
The tag mark, tag name, tag comment, and alarm status character string are displayed as the tag information of the source of the alarm.
The tag mark displays the process status with alarm-specific colors.
The figure below shows an example of the message.

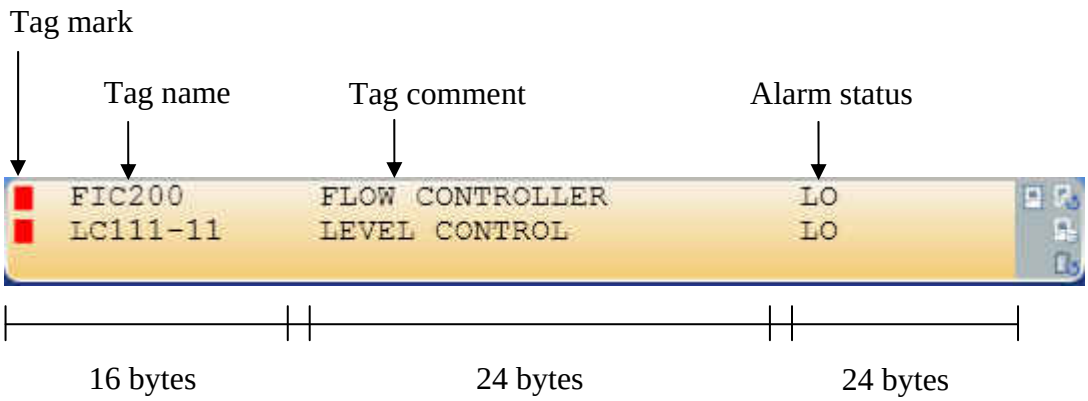


Figure: Example of Process Alarm Message

When the CAMS for HIS is enabled, alarm messages can be acquired from multiple PCSs (process control systems). The alarm messages output by the PCSs are displayed in the message display area.

Clicking the displayed alarm message calls up one of the following windows according to the setting of [Message Area] of the Window Switching tab of the HIS Setup Window: the upper-level window, tuning view, faceplate view, and individual process alarm acknowledgment window for the tag that raised the alarm.

System Alarm Message
The system alarm mark and the message are displayed as information that notifies the failure of hardware and communication of the system, and the recovery.
The system alarm mark is displayed in green at the recovery and in red at abnormality detected.
The figure below shows an example of the System Alarm Message.

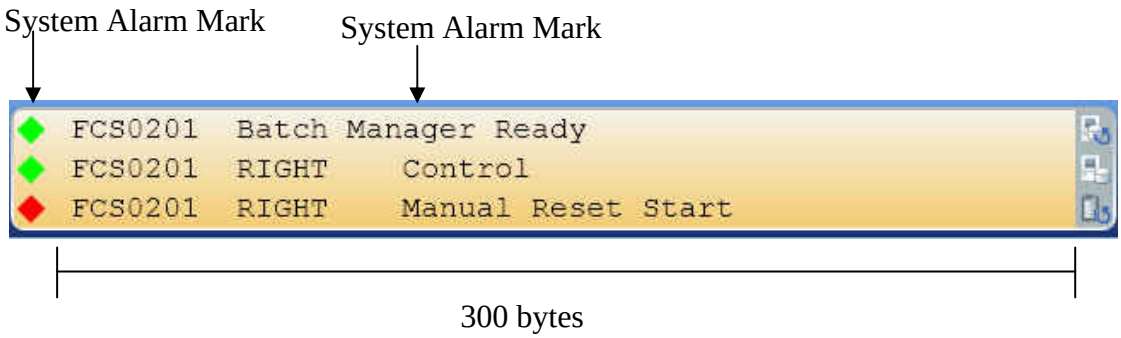


Figure: Example of System Alarm Message

Clicking the displayed alarm message will call up the system alarm view or individual system alarm acknowledgment window according to the setting of [System Alarm Mark] in the Window Switching tab of the HIS Setup Window.

User Information Display Area
In this area, the logged-on user name and the privilege level assigned to that user are indicated.
When the security mode has been switched by using the Mode Selection key on the operation keyboard, the privilege level corresponding to the key position is displayed.
The display format of user information can be selected from among formats shown below.
This selection is made in the Security tab sheet of the HIS Utility.
•Display user name and privilege level (default).
•Display user name only
•Display no user information
Clicking the user information display area opens the User-In dialog box.

System Status Icon Display Area
The icon display area is in the rightmost part of the message display area. The icons that indicate the status of the HIS or the system are displayed. They are not displayed when there are no status icons to indicate.
The icons appear when the following events occur, and disappear automatically when the events return to normal.


This icon is displayed when the engineering functions are running on the HIS.


This icon is displayed when virtual test is being performed on the HIS.
During execution of virtual test, the background color of the message display area becomes orange (single test mode) or yellowish green (multi test mode).


E020513E.ai
This icon is displayed when target test is being performed while I/O is disconnected.
During execution of target test, the windows displayed on the screen can be framed in yellow by the setting of Windows.


E020514E.ai
This icon is displayed when an equalization request arises from the builder.


This icon is displayed when the HIS is isolated.

Advanced Alarm Filter Display Area
When the Advanced Alarm Filter Package has been installed, the names of the active advanced alarm filters are displayed in the leftmost part of the message display area.
An alarm filter name consists of "AF" and a two-digit number. For instance, it is displayed as "AF01".
The display can be modified in the Alarm tab of the HIS Setup Window.

Date and Time Display Area
The date and time of the system are displayed in this area. The date is shown in the "short date" style in the format specified at "Regional and Language Options" in the Control Panel of Windows.

User-In and User-Out
Clicking the user information display area calls up the User-In dialog box.
In the User-In dialog box, registering or changing of passwords, switching users (user-in), users log-out, and shutting down Windows can be done.
The figure below shows an example of the User-In dialog box.

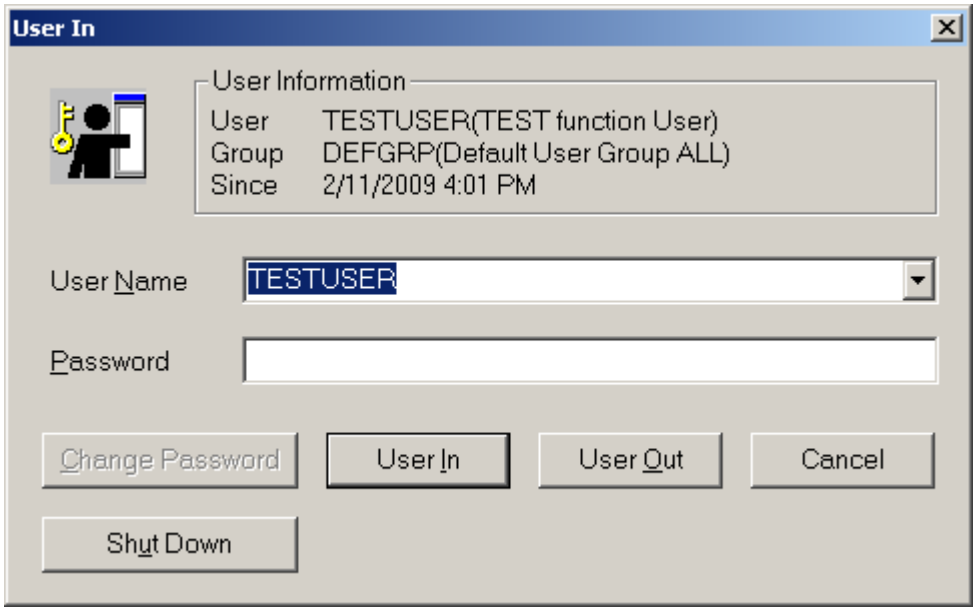


Figure: User-In Dialog Box

•User In information
The user name and user group of the current user, and the time when the user has logged on are displayed.

•[Change Password] button
This is used when changing a password. Up to 32 single-byte alphanumeric characters can be entered as a password.

•[User In] button
Logs on with the user name entered in the User-In dialog box.

•[User Out] button
The logged on user logs out.

•[Cancel] button
This is used to cancel the operation in the User-In dialog box and close the User-In dialog box.

•[Shut Down] button
This is used to shut down Windows. This button is displayed when the user has logged on with privilege level S3 (ENG User).

When the user is switched, all the operation and monitoring windows are closed.

4. PROCESS ALARM VIEW

The Process Alarm view displays process alarms in the order they are generated, starting with the most recent alarm.

4.1. Outline of the Process Alarm View

A Process Alarm view displays process alarm messages and annunciator messages in the order that the most recent message appears on the top. When an alarm occurs, the icon of the alarm displayed on the System Message banner and the LED on the operation keyboard will start to blink along with an audible sound to notify the operator.
The window displays alarms generated after the HIS are started.

Types of Process Alarm Views
There are three display sizes for the Process Alarm view: large, medium and special size. Each size has its own pattern of window display. On the large- and medium-size Process Alarm views, the process alarm messages and annunciator messages are all listed. On the special-size Process Alarm view, the three most recent process alarm messages are displayed. The special-size Process Alarm view is referred to as the Process Alarm Individual Acknowledge window.
The size of the Process Alarm view that is called up from the System Message banner can be set in the HIS Setup window of the system maintenance window. When a size other than the large size is specified, it is displayed as a pop-up window in a full screen mode.

The figure below shows an example of a Process Alarm view.

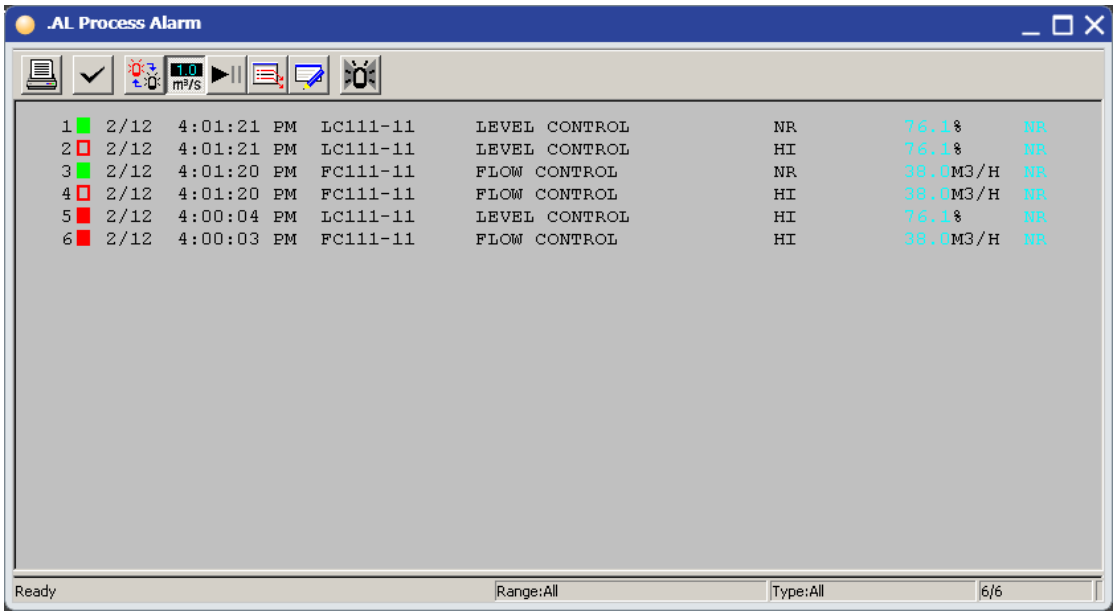


Figure: Process Alarm View

Moving the Cursor in the Process Alarm View
When the process alarm view is called up, no cursor is displayed. Clicking the mouse displays the cursor. The cursor movement in the process alarm view is explained below:
•Clicking a certain line in the message moves the cursor to the line directly.
•Operating the cursor keys [↑] and [↓] moves the cursor vertically. Operating the key [↑] at the uppermost line in the window scrolls the cursor up one line to the previous window. Operating the key [↓] at the uppermost line in the window scrolls the cursor down one line to the next window.
•To delete the cursor, operate the [ESC] or [CL] key.

4.2. Components of the Process Alarm View

The Process Alarm view consists of a toolbar, message display area and status bar.

Toolbar of the Process Alarm View
A process alarm can be acknowledged or the Process Alarm Individual Acknowledgment window can be called up using the toolbar of the Process Alarm view.
On Alarm tab of HIS Setup window, if [All/High Alarms] option is checked in the [Select Alarms for Display According to Priority Levels] column, the following toolbar displays.

Figure: Toolbar of the Process Alarm View

The following paragraph explains the buttons on the Process Alarm view toolbar.


This button prints out all process alarm messages and annunciator messages occurred.


This button acknowledges the process alarm messages and annunciator messages.
“Global acknowledgment” or “individual acknowledgment” can be used to acknowledge the alarm messages.
When the global acknowledgment is used, all the unacknowledged alarm messages can be acknowledged by clicking this button.
For the individual acknowledgment, click this button after selecting the function block alarm message to be acknowledged.
When all the process alarms are acknowledged, the Process Alarm view call button will change from flashing to lit. When all the alarms are deleted, the color of the button will return to the normal display color.
The alarm message acknowledgment method can be set in the HIS Setup window of the system maintenance window. The setting of the acknowledgment method is in common with those of the acknowledgment method of the operator guide messages and system alarm messages.


While this button is pressed down, only the high priority alarms are displayed.
All the alarms are displayed when the button is released.

When this button is pressed down, the present process variable of the analog data is displayed with the engineering unit symbol. At this point, the alarm status is also displayed.
When the button is released, these displays disappear.


The alarm message display is retained for 5 seconds without being updated. Click this button again may restart display update.


This button calls up the Filter dialog.
In the Filter dialog, the filter conditions of the Process Alarm view, such as displaying the alarms of a specific control station or function block, can be specified.

The specified filter conditions are displayed in the status bar of the Process Alarm view.

This button calls up the dialog box for setting the display properties in the process alarm view. The items of the messages to be displayed in the process alarm view are customizable.

When an alarm occurs in ProSafe-RS SCS (Safety Control Station), the color of the button changes to indicate that the alarm has become active.
Clicking this button, the alarm messages filtered by the keyword “Safety Control Station” will be displayed. If other keywords are already set to the filter, the filter will be reverted to “Safety Control Station.”

On Alarm tab of HIS Setup window, if [High/Medium/Low Priority Alarms] option is checked in the [Select Alarms for Display According to Priority Levels] column, the following toolbar displays.

When this button is pressed, high priority alarms are displayed.

When this button is pressed, medium priority alarms are displayed.

When this button is pressed, low priority alarms are displayed.
When the process alarm view is called out, all the above buttons are in pressed state.
When pressing other buttons, the alarms are displayed together regardless the option is [All/High Priority Alarms] or [High/Medium/Low Priority Alarms].

Message Display Area of the Process Alarm View
Process alarm messages and annunciator messages occurred are displayed in the order from the latest messages first, in the message display area of the Process Alarm view. A maximum of 200 alarm messages can be held. If the number of alarm messages occurred exceeds 200, the messages will be deleted starting with the oldest ones that have been acknowledged. When there are no acknowledged alarm messages, the oldest unacknowledged messages are deleted first.
The figure below shows an example of a display format for the message display area.

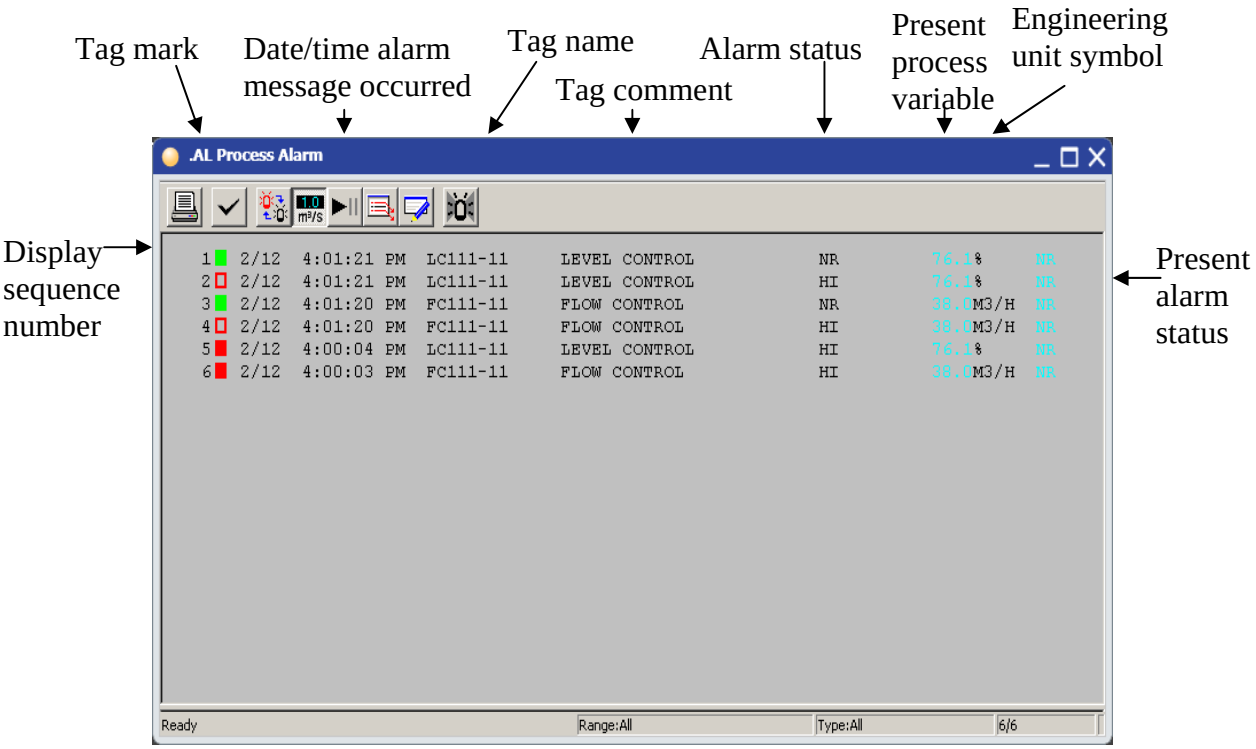


Figure: Message Display Area of the Process Alarm View

•Display sequence number
Number 1 through 200 is displayed.

•Tag mark
This mark is specific to the system and indicates that the alarm is a process alarm.
Note that the color and status of the tag mark differ according to the status of the process alarm as described below.
Flashing in red:
A process alarm message or annunciator message notifying that a malfunction occurred, and the contents of the alarm remain unacknowledged.
Flashing in green:
A process alarm message or annunciator message notifying that a normal state has been restored and the contents of the alarm remain unacknowledged.

Lit up:
A process alarm message or annunciator message has occurred, and the contents of the alarm have been acknowledged.

•Alarm occurrence Date & Time stamp
The date and time the process alarm occurred are displayed.

•Tag name
The tag name of the function block where the alarm generated is displayed.

•Tag comment
The tag comment of the function block where the alarm generated is displayed. No tag comment is displayed for annunciator messages.

•Annunciator message
The annunciator messages generated are displayed.

•Alarm status
The alarm status when the alarm was generated is displayed.

•Present process variable
When the following button notifying the present value is pressed down, the present value of the analog data for the function block generating the alarm is displayed with the engineering unit symbol. Return the button to the normal state to stop the display.

•Current alarm status
When the button that notifies the present value is pressed down, the current value of the alarm status of the occurring alarm is displayed. Return the button to the normal state to stop the display.

Status Bar of the Process Alarm View
The following items are displayed in the Process Alarm view status bar.
•Window display range selected in the Filter dialog
•Message type selected in the Filter dialog
•Number of displayed messages, number of generated messages

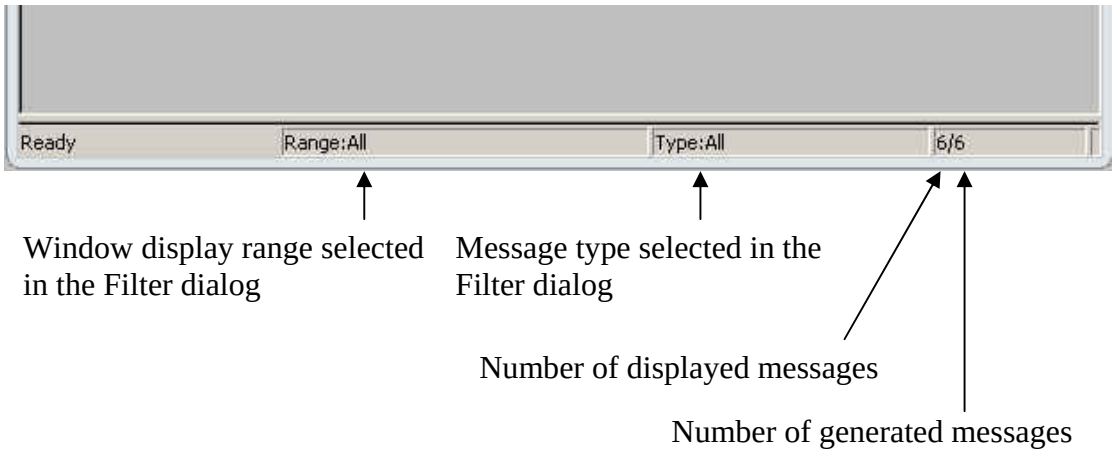


Figure: Status Bar of the Process Alarm View

4.3. Properties of Process Alarm View

The display properties of the process alarm view can be set in the Window Setup dialog box.

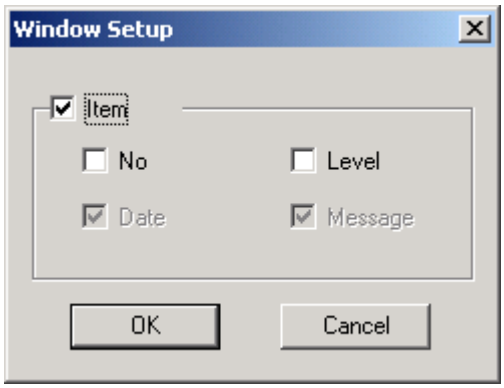


Figure: Window Setup dialog box of the Process Alarm View

•Item
When this box is checked, the view of process alarm view can be configured. By default, this box is not checked.

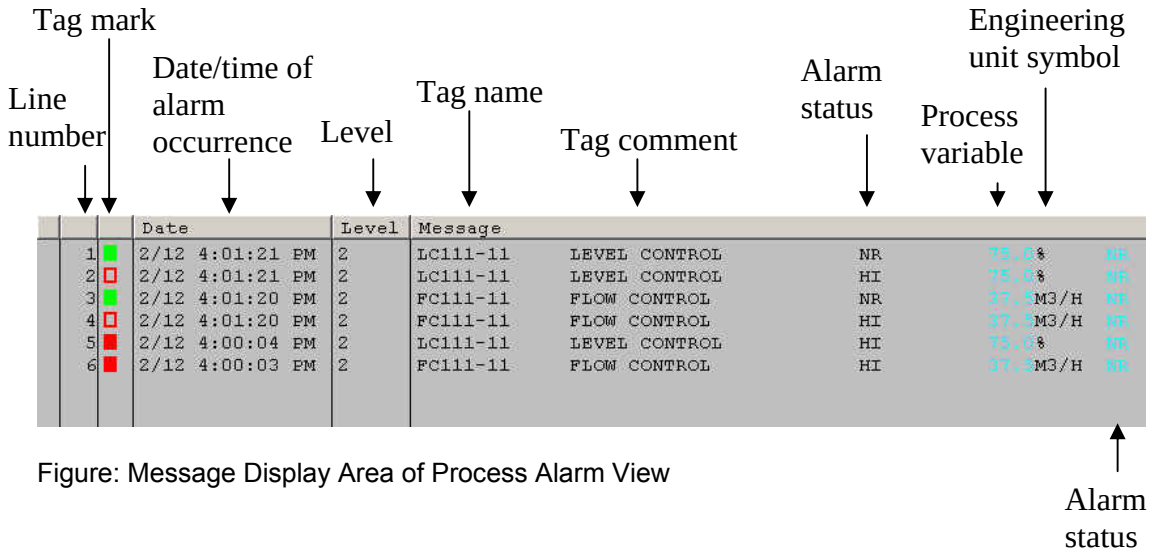
•No (Number)
When [Item] is checked, Show/Hide the line number is determined by this option box. By default, this box is checked.

•Date
Fixed display item.

•Level
When [Item] is checked, Show/Hide the message level is determined by this option box. By default, this box is not checked.

•Message
Fixed display item.

All Items Displayed in Message Display Area
When all items including [No] and [Level] are selected, the sample messages displayed in the process alarm view are shown as follows:



		Date	Level	Message				
1		2/12 4:01:21 PM	2	LC111-11	LEVEL CONTROL	NR	75.0%	NR
2		2/12 4:01:21 PM	2	LC111-11	LEVEL CONTROL	HI	75.0%	NR
3		2/12 4:01:20 PM	2	FC111-11	FLOW CONTROL	NR	37.5M3/H	NR
4		2/12 4:01:20 PM	2	FC111-11	FLOW CONTROL	HI	37.5M3/H	NR
5		2/12 4:00:04 PM	2	LC111-11	LEVEL CONTROL	HI	75.0%	NR
6		2/12 4:00:03 PM	2	FC111-11	FLOW CONTROL	HI	37.5M3/H	NR

Figure: Message Display Area of Process Alarm View

Clicking the header of Date column or the header of Level column, the messages can be sorted in the Date order or in the Level order.
Level stands for the alarm priority. The alarm priority levels are listed below:
1: High
2: Medium
3: Low
However, the alarm priority levels cannot be displayed in the special size windows.

4.4. Filter and Display Process Alarm Messages

Using the filter dialog box, the messages that matched the filter conditions can be displayed separately from the display of the entire messages

Splitting Process Alarm View

With a horizontal split, a window can be displayed into two frames. The filtered messages are displayed in the top frame while the whole messages are displayed in the bottom frame.
If the options of [Select Alarms for Display According to Priority Levels] is checked on Alarm tab of the HIS Setup window, only the selected High/Medium/Low priority alarm messages will be displayed in top and bottom frames.

An example of the process alarm view split is shown as follows:

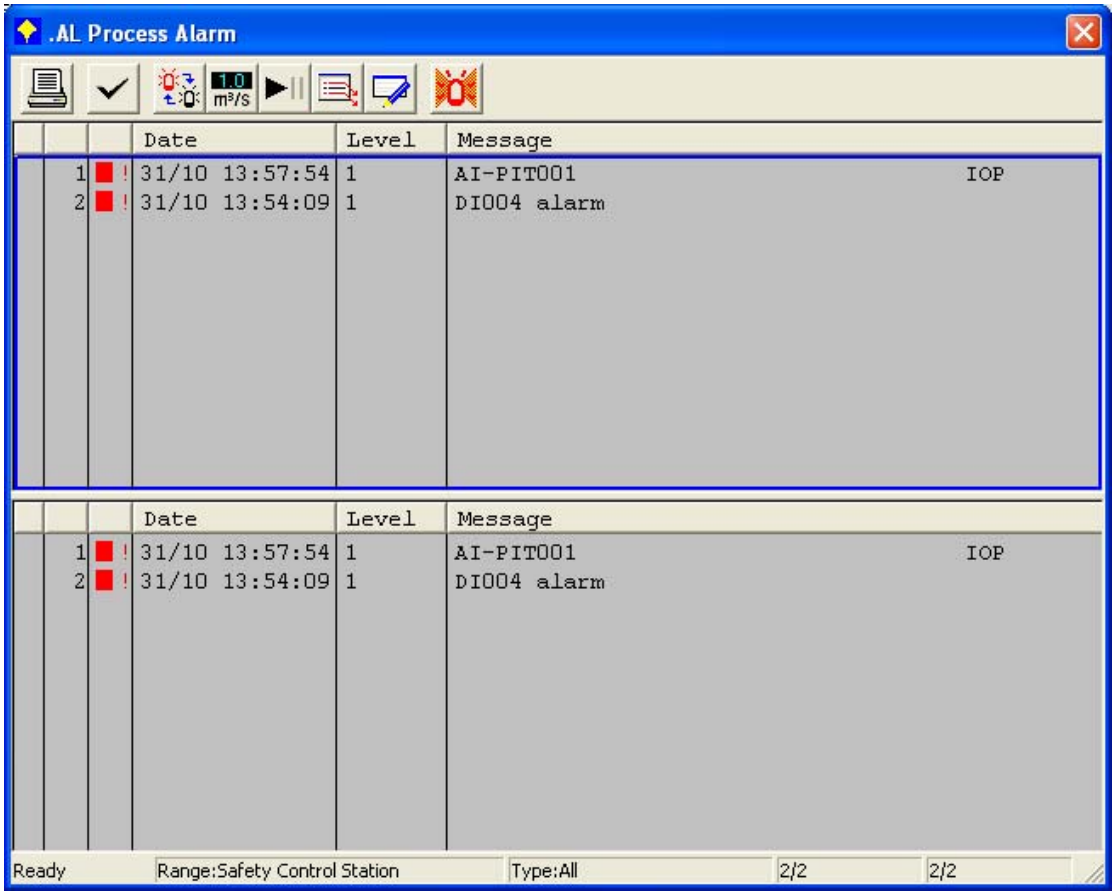


Figure: Process Alarm View Split

Switching Active Frame

The active frame can be switched from top frame to bottom frame or vice versa by pushing the [Tab] key on the keyboard or using the mouse to clink the frame area. The active frame, either top frame or the bottom frame, will be enclosed with a highlighted border. The operations of acknowledging, deleting or printing the messages are valid only for the messages in the active frame.

Move Split Bar

The window split bar can be moved up to the second line of the message area or moved down next to the status bar.

Status Bar
The status bar of the message window indicates the following information:
•Filter range
•Filter conditions
•Number of messages in the top frame, Total number of filtered messages; Number of messages in the bottom frame, Total number of occurred messages.

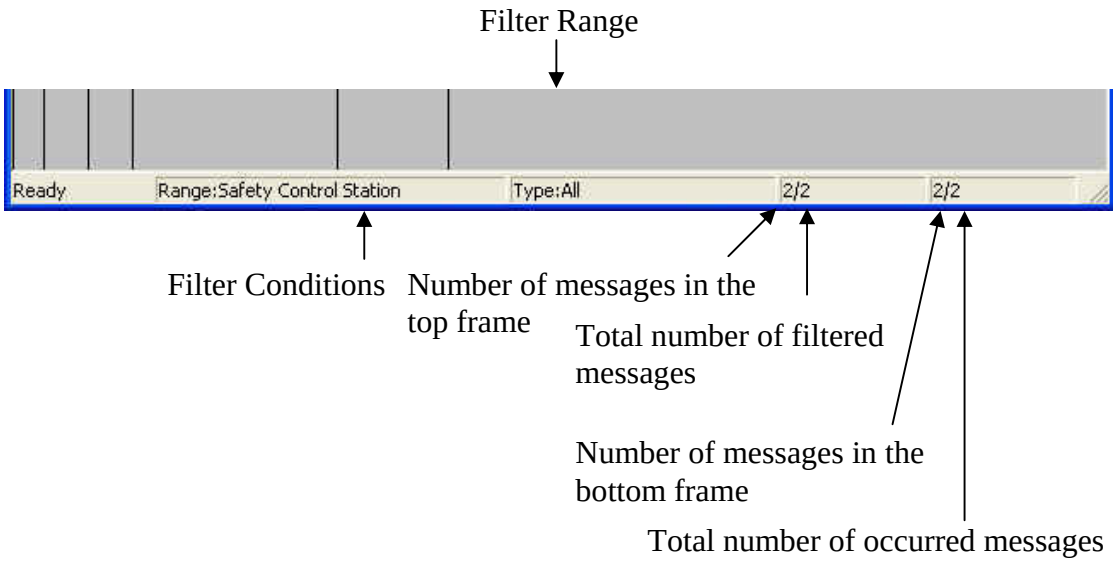


Figure: Status Bar of Process Alarm View

Alarm Message Filter Dialog Box
The Filter dialog is called up using the toolbar button indicated below.

The figure below shows an example of the alarm message Filter dialog.

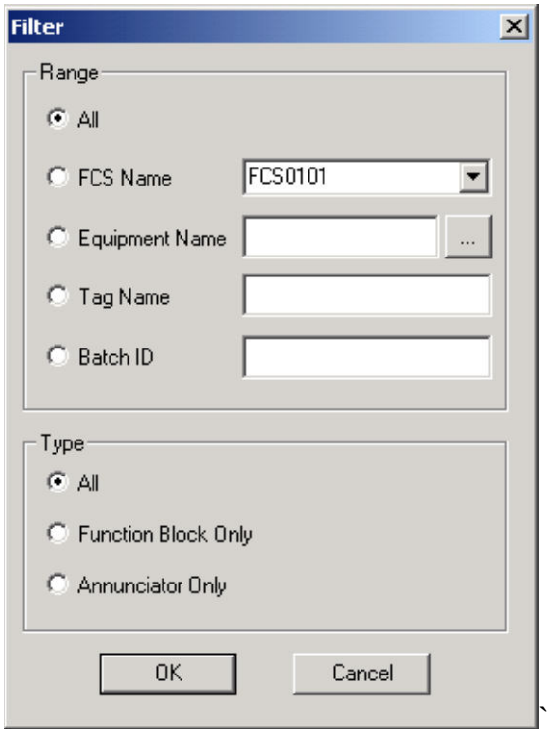


Figure: Process Alarm Message Filter Dialog

The following key words may be specified when searching for process alarm messages or annunciator messages.

Search Range
•All
Displays all process alarm messages and annunciator messages.

•FCS Name
Displays process alarm messages and annunciator messages generated from the selected control station.

•Equipment Name
Displays process alarm messages and annunciator messages generated from the selected control drawing or unit instrument tag. When the plant hierarchy is defined, the process alarms and annunciators assigned to a unit instrument can be displayed with the unit instrument.
The plant hierarchy can be selected and searched in the dialog box as shown below which is called up by clicking the button to the right of the text box. Select the hierarchy name and then click the [OK] button to display the name of the selected hierarchy in the text box.

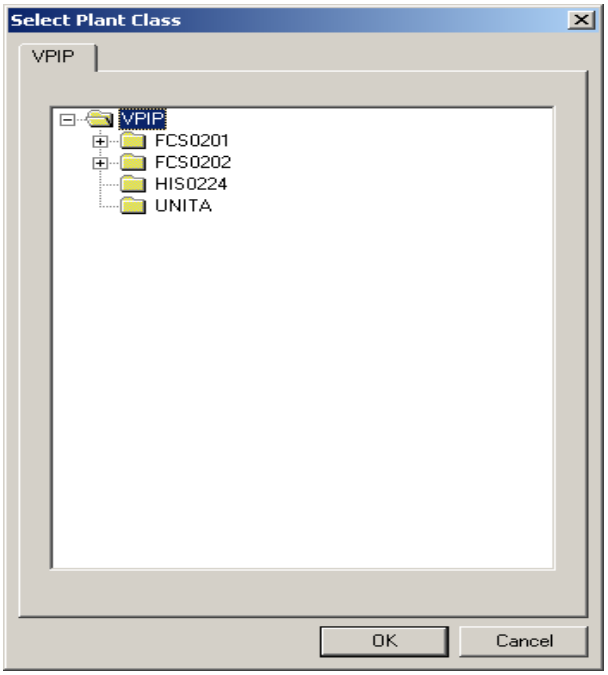


Figure: Select Plant Class Dialog Box

•Tag Name
Displays process alarm messages and annunciator messages related to the specified function block.

•Batch ID
Displays process alarm messages and annunciator messages related to the specified batch ID. A unit instrument with batch ID can display the process alarms and annunciators with it after the plant hierarchy is defined.

•Safety Control Station
The alarms occurred in ProSafe-RS SCS (Safety Control Station) will be displayed as alarm messages.

Search Type
•All
Displays all process alarm messages and annunciator messages.

•Function Block Only
Displays process alarm messages only.

•Annunciator Only
Displays annunciator messages only.

Displaying ProSafe-RS Process Alarm Messages
When opening the process alarm view while the ProSafe-RS SCS process alarms are occurring, the messages will be automatically detected and displayed by HIS. At the same time, the alarm messages will be filtered by the keyword “Safety Control Station.” If other keywords are already set to the filter, the filter will be reverted to “Safety Control Station.”

4.5. Process Alarm Individual Acknowledgement Window

The Process Alarm Individual Acknowledgment window displays the three most recent process alarm messages.

Components of the Process Alarm Individual Acknowledgment Window

In the Process Alarm Individual Acknowledgment window, alarms related to the selected function block may be displayed and acknowledged.
The figure below shows and example of a Process Alarm Individual Acknowledgment window. The Process Alarm Individual Acknowledgment window consists of a message display area and an acknowledgment button.

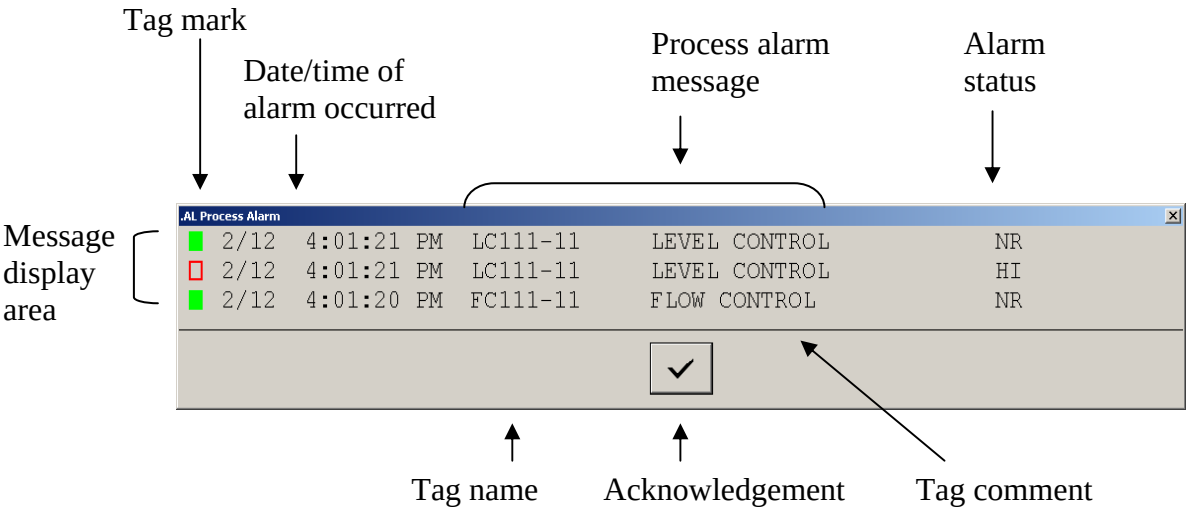


Figure: Process Alarm Individual Acknowledgment Window

Acknowledging a Process Alarm

No matter if the alarm message acknowledgment method is global or individual, the three messages will be acknowledged simultaneously.

4.6. Context Menus in Process Alarm View

When using the mouse in Process Alarm view, pointing the mouse cursor to a displayed alarm and then right click the mouse, a context menu can be displayed. Choosing a menu item, the task corresponding to the menu item will be performed. Therefore, the upper window of the alarm can be opened from the process alarm view simply by a mouse click.

Context Menu Display

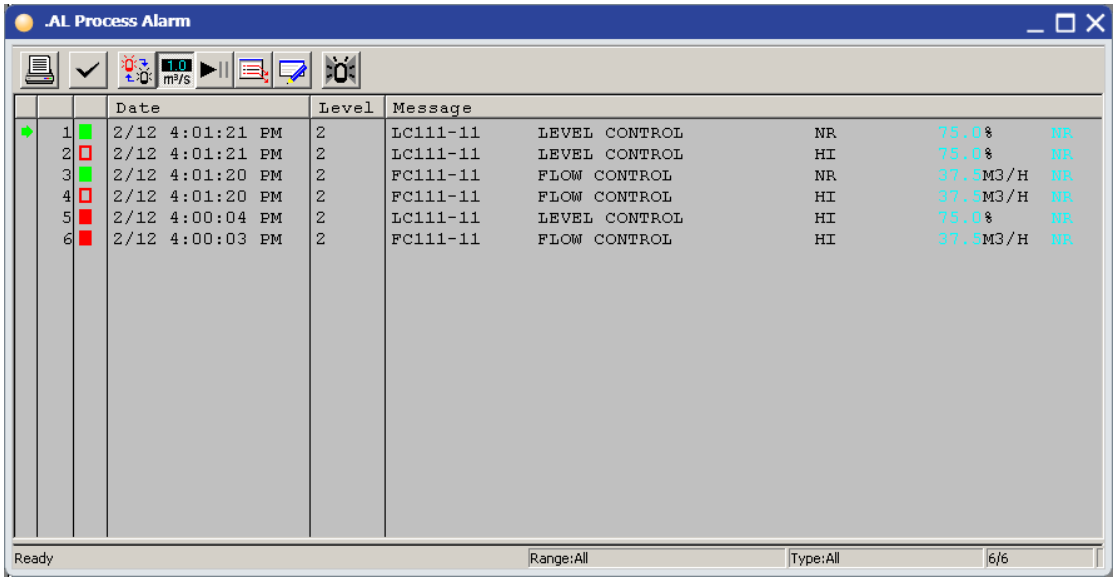


Figure: Context Menu Display

5. SYSTEM ALARM VIEW

The System Alarm view is an overview that displays the system alarm messages to notify the user of system hardware errors (FCS down, card error, etc.) and communication errors.

5.1. Outline of the System Alarm View

The System Alarm view displays system alarm messages in the order with the most recent ones first. When an alarm occurs, the alarm starts to buzz, and at the same time the button in the System Message banner and the LED for the key on the operation keyboard begin to flash to notify the operator.

Types of System Alarm Views

There are three display sizes for the System Alarm view: large, medium, and special size. Each size has its own pattern of window display. In the large and medium sized System Alarm views, the system alarm messages appear in an overview display. In the special sized System Alarm view, only the most recent system alarm message appears. The special sized System Alarm view is referred to as the System Alarm Individual Acknowledgment window. The size of a System Alarm view called up from the System Message banner can be set in the HIS Setup window of the system maintenance window. When a size other than the large size is specified, it is displayed as a secondary window in full screen mode.

The figure below shows an example of a System Alarm view.

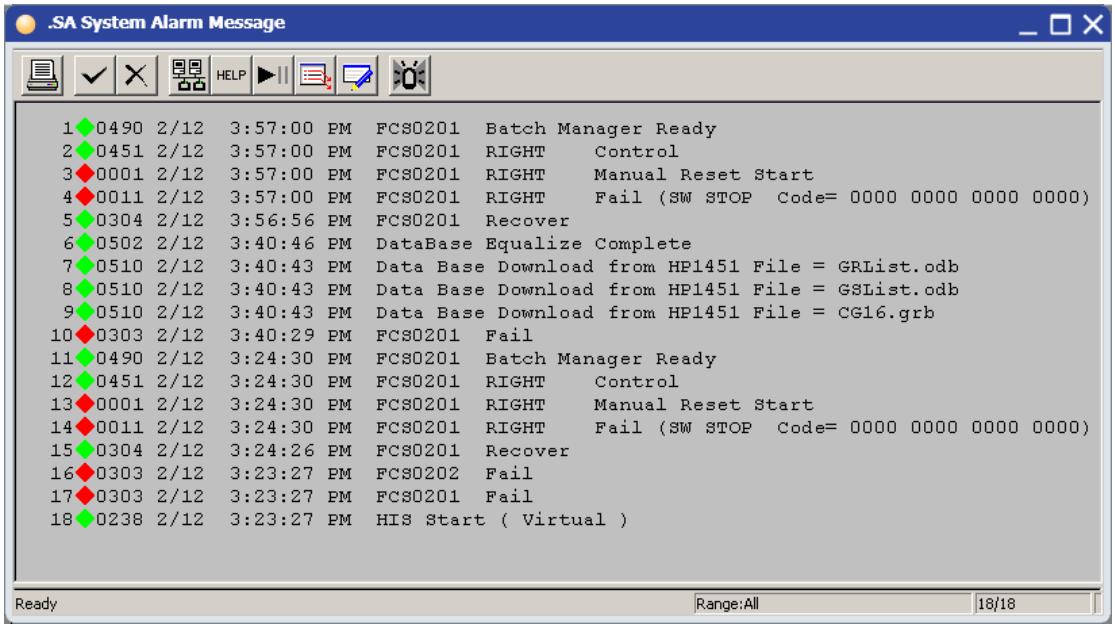


Figure: System Alarm View

The figure below shows an example of a System Alarm Individual Acknowledgment window.

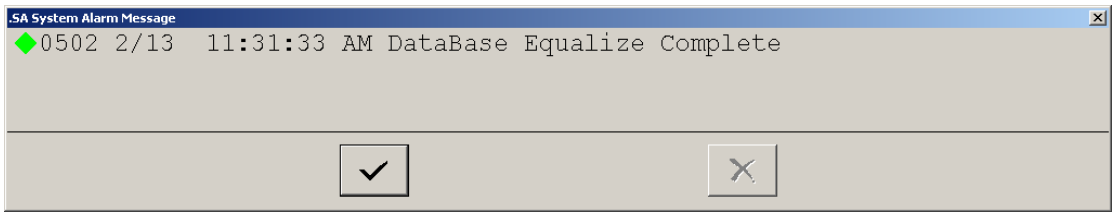


Figure: System Alarm Individual Acknowledgment Window

Moving the Cursor in the System Alarm View
When the System Alarm view is called up, no cursor is displayed. Clicking the mouse displays the cursor. The cursor movement in the System Alarm view is explained below:
•Clicking a certain line in the message moves the cursor to the line directly.
•Operating the cursor keys [↑] and [↓] moves the cursor vertically. Operating the key [↑] at the uppermost line in the window scrolls the cursor up one line to the previous window. Operating the key [↓] at the uppermost line in the window scrolls the cursor down one line to the next window.
•To delete the cursor, operate the [ESC] or [CL] key.

5.2. Components of System Alarm View

The System Alarm view consists of a toolbar, message display area and a status bar.

Toolbar of the System Alarm View
Using the toolbar of the System Alarm view, the user can acknowledge or delete system alarm messages and call up the System Alarm Individual Acknowledgment window.

Figure : Toolbar of the System Alarm View

The buttons in the System Alarm view toolbar are explained below.


This button prints out all system alarm messages that are occurring.


The system alarm messages are acknowledged with this button.
“Global acknowledgment” or “individual acknowledgment” can be used to acknowledge the alarm messages.
When the global acknowledgment is used, all of the unacknowledged operator guide messages can be acknowledged by clicking on this button.
For the individual acknowledgment, select the system alarm message to be acknowledged, then click this button.
When all the system alarm messages are acknowledged, the button for calling up the System Alarm view stop flashing.
The alarm message acknowledgment method can be set in the HIS Setup window of the system maintenance window. The setting of this acknowledgment method is in common with those of the acknowledgment method of the operator guide messages and process alarm messages.


Acknowledged system alarm messages are deleted with this button.
When the global acknowledgment is used to acknowledge the system alarm messages, all the acknowledged system alarm messages are deleted by clicking this button.
When the individual acknowledgment is used to acknowledge the system alarm message, select the acknowledged system alarm message to be deleted, then click this button. The selected acknowledged message is deleted.
When all the system alarm messages are deleted, the color of the System Alarm view call button changes to normal color.

This button calls up the System Status Overview.

This button calls up the Help window, which explains the system alarm message.
Click this button after selecting a displayed system alarm message calls up a Help window corresponding to that particular system alarm message. If this button is clicked without selecting any system alarm message, a Help window which explains the System Alarm view appears.

Help window may be called up to display help from any designated system alarm message by double-clicking the message directly.

The system alarm message display update is retained for 5 seconds. Click this button again to update display.

This button calls up the Filter dialog box. In the filter dialog, filter conditions for System Alarm views, such as displaying system alarm messages of a specific control station, can be specified.
Specified filter conditions are displayed on the status bar of the System Alarm view.

This button calls up the dialog box for setting the display properties in the system alarm message window. The items of the messages to be displayed in the System Alarm view are customizable.

When an alarm occurs in ProSafe-RS SCS (Safety Control Station), the color of the button changes to indicate that the alarm has become active.
Clicking this button, the alarm messages filtered by the keyword “Safety Control Station” will be displayed. If other keywords are already set to the filter, the filter will be reverted to “Safety Control Station.”

Message Display Area of the System Alarm View
The system alarm messages occurred are displayed in the order from the latest message in the System Alarm view message display area. A maximum of 100 alarm messages are saved. If the number of system alarms generated exceeds 100, the messages will be deleted starting from the oldest system alarm message that has been acknowledged. When there are no acknowledged system alarm messages, the oldest messages that are unacknowledged are deleted first.
The figure below shows an example of a display format for the message display area.

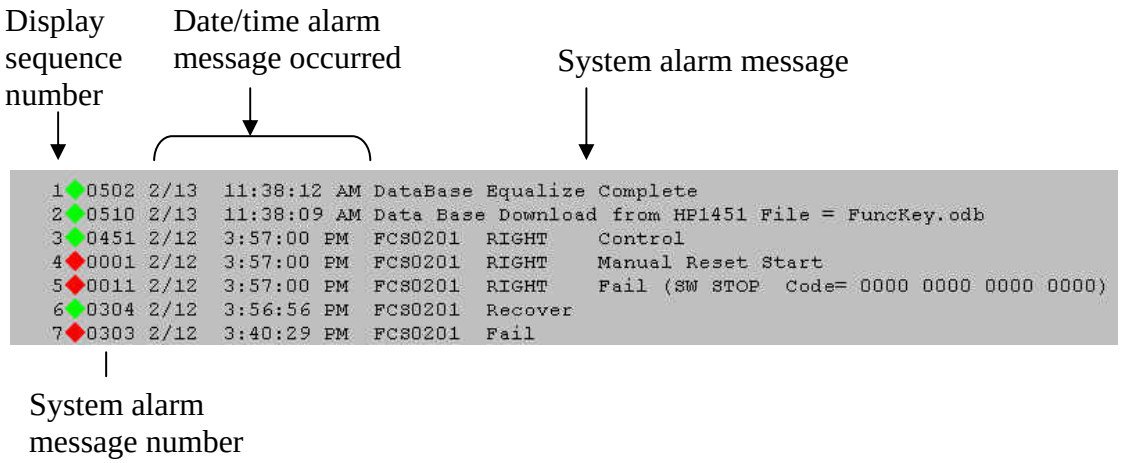


Figure: Message Display Area of the System Alarm View

•Display sequence number
Numbers 1 through 100 are displayed.

•System alarm mark
This mark is specific to the system and indicates that the generated alarm is a system alarm message. The circumstances of the system alarm message occurrence are indicated by the color and status of the alarm mark.
Flashing red:
A system alarm message to notify of an error has occurred and the contents of the alarm remain unacknowledged
Flashing green:
A system alarm message to notify recovery from error has occurred and the contents of the alarm remain unacknowledged
Static:
A system alarm message has occurred and the contents of the alarm have been acknowledged

•System alarm message number
The system alarm message number is a registration number for the system to identify the alarm message. The system alarm message number can not be defined by the user but built-in the system.

•Time stamp of the alarm message
The date and time the system alarm occurred are displayed.

•System alarm message
The system error is also notified by sound. The system alarm message is not specified by the user but provided by the system.

Status Bar of the System Alarm View
The following items are displayed on the System Alarm view status bar:
•Display range of the window selected in the Filter dialog box
•Number of displayed messages, number of messages occurred

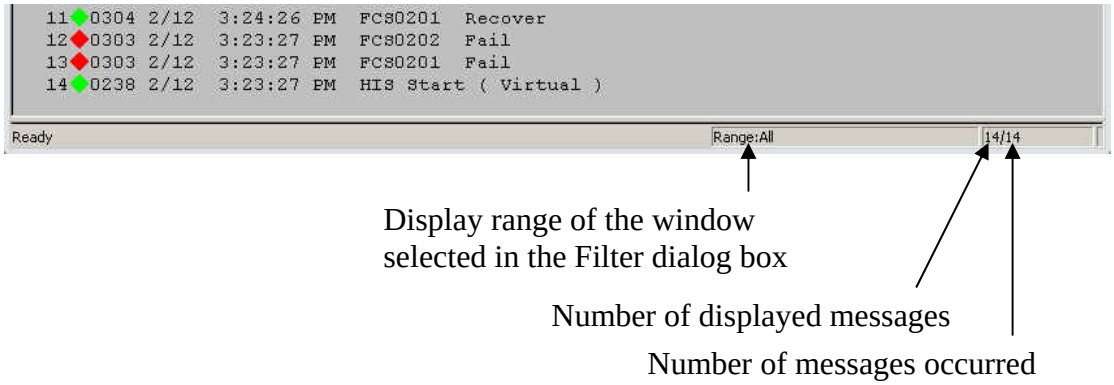


Figure: Status Bar of the System Alarm View

5.3. Properties of System Alarm View

The display properties of the System Alarm view can be set in the properties dialog box.

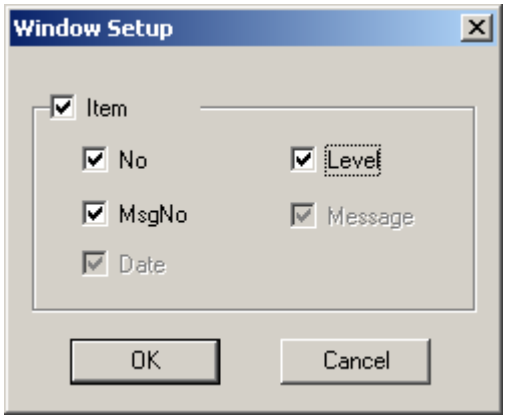


Figure: Window Setup dialog box of the System Alarm View

•Item
When this box is checked, the view of System Alarm view can be configured. By default, this box is not checked.

•No (Number)
When [Item] is checked, Show/Hide the line number is determined by this option box. By default, this box is checked.

•MsgNo
When [Item] is checked, Show/Hide the message number is determined by this option box. By default, this box is checked.

•Date
Fixed display item.

6. OPERATOR GUIDE VIEW

The Operator Guide view display operator guide messages.

6.1. Outline of Operator Guide View

The Operator Guide view displays in order the operator guide messages occurred, starting with the most recent item.
When a message is generated, the icon of the message displayed on the System Message banner and the LED on the operation keyboard will start to blink along with an audible sound to notify the operator.

Types of Operator Guide View

There are three display sizes for Operator Guide view: large, medium and special; and the window display style differs by the size. In the large- and medium-size Operator Guide view, the operator guide messages appear in the overview display. In the special-size Operator Guide view, only the most recent operator guide message appears. The special-size Operator Guide view is referred to as the Operator Guide Individual Acknowledge window.
The size of the Operator Guide view which is called up from the System Message banner can be set in the HIS Setup window of the system maintenance window. When a size other than the large size is specified, it is displayed as a pop-up window in a full screen mode.

The figure below shows an example of an Operator Guide view.

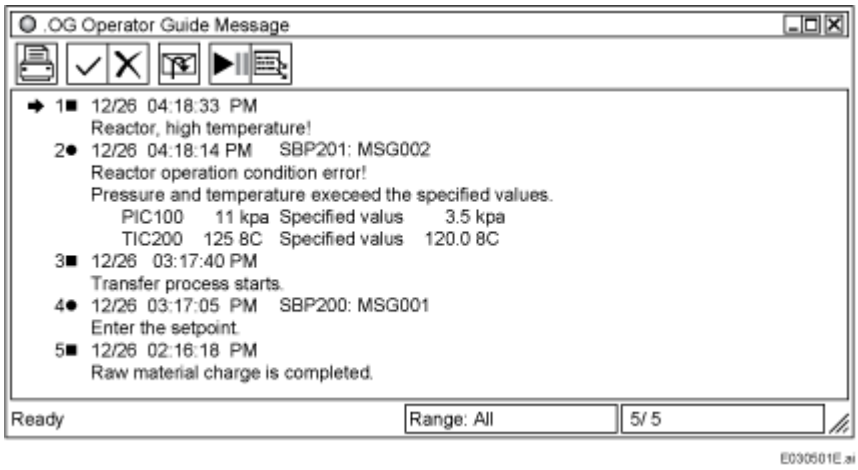


Figure : Operator Guide View

The figure below shows an example of the Operator Guide Individual Acknowledgment window.

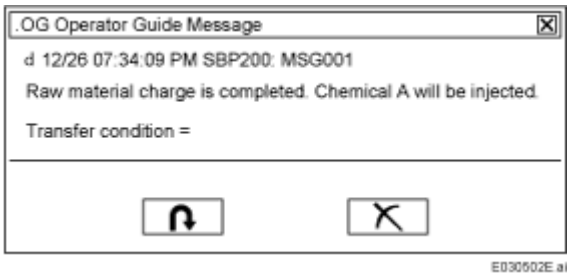


Figure: Operator Guide Individual Acknowledgment Window

•The operator guide messages that have occurred beyond the operation and monitoring authority of the logged-in user are not displayed in the Operator Guide view.
•The side scroll bar is not displayed even if the window is resized to a smaller size. At that time, the resized portion of the display contents on the right side will be hidden from view.

Types of Operator Guide Messages
Operator guide messages are defined by the user using the builders. Because the user can define the message contents as desired, these are useful in informing the operator of the progress of control and instructions concerning operations.
The two types of operator guide messages are given below. The acknowledgment method differs by the type of the operator guide message.

•Guide message
The operator guide messages that notify the operator of the process progress and operation guidance.

•Dialog message
The operator guide messages that prompt the operator to acknowledge or input a value, and notify the control station of the input results, as well as notifying the process progress, etc.
Use the Operator Guide Builder to set the contents of the guide messages and the colors of the marks. Define the contents of dialog messages and settings for colors of the marks using SEBOL.

Calling up a Related Window
With the cursor selecting a particular operator guide message, a window related to the operator guide message can be called up. Note that this function is valid when the operator guide message is interactive.

Calling Windows of Plant Resource Manager
The messages initiated by Plant Resource Manager (hereinafter referred to as PRM) can be displayed in the Operator Guide view.
The category of the messages is “Guide messages.” This feature enabled the operator to visualize the field device trouble on the operation and monitoring window of HIS. (*1)
Moreover, double-clicking a message can display a window according to the operator action instructions. The operator action instruction has the following two types:
•Check Device: Show the DeviceViewer that corresponds to the device tag. DeviceViewer is a PRM application.
•Check Tag: Show the Faceplate view that corresponds to the function block tag.

*1: This feature is not valid during virtual test is being performed.
The samples of PRM initiated messages are shown below:

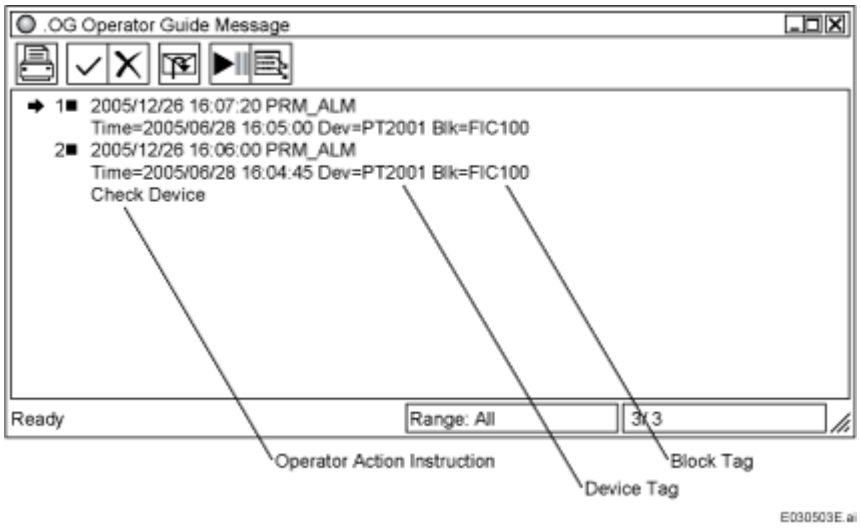


Figure: Samples of PRM Initiated Messages

Moving the Cursor in the Operator Guide View
When the Operator Guide view is called up, no cursor is displayed. Clicking the mouse displays the cursor. The cursor movement in the Operator Guide view is explained below:
•Clicking a certain line in the message moves the cursor to the line directly.
•Operating the cursor keys [↑] and [↓] moves the cursor vertically. Operating the key [↑] at the uppermost line in the window scrolls the cursor up one line to the previous window. Operating the key [↓] at the uppermost line in the window scrolls the cursor down one line to the next window.
•To delete the cursor, operate the [ESC] or [CL] key.

6.2. Components of Operator Guide View

The Operator Guide view consists of a toolbar, message display area and a status bar.

Toolbar of the Operator Guide View

Using the toolbar in the Operator Guide view, the operator guide message currently displayed can be acknowledged and the Operator Guide Individual Acknowledgment window can be called up.

Figure:Toolbar of the Operator Guide View

The buttons in the toolbar of the Operator Guide view are explained as follows.

This button prints out all operator guide messages that have occurred.

This button acknowledges the guide message within the operator guide messages.
"Global acknowledgment" or "individual acknowledgment" can be used to acknowledge the guide messages.
When the global acknowledgment method is used, all of the unacknowledged operator guide messages can be acknowledged by clicking this button.
When the individual acknowledgment method is used, click this button after selecting the guide message to be acknowledged. The messages identical to the guide message to be acknowledged will be acknowledged at the same time. Selecting an interactive message will result in a misoperation.
The guide message acknowledgment method can be set in the HIS Setup window of the system maintenance window. The settings of this acknowledgment method are the same as those of the acknowledgment method of the process alarm messages and system alarm messages.

This button deletes the guide messages that have been already acknowledged from the operator guide messages.
When the acknowledgment method is "global acknowledgment," all of the acknowledged guide messages are deleted by clicking this button.
When the acknowledgment method is "individual acknowledgment," select the guide message you wish to delete, then click this button. The guide messages identical to the one to be deleted will be deleted simultaneously.

Select a dialog type message then click this button may call up an Operator Guide Individual Acknowledgment window which prompts for the operator's confirmation. An entry dialog box is called up if any data entry is required to acknowledge the message. Upon completion of operation in this window, the message mark for the corresponding operator guide message displayed in the Operator Guide view stops flashing.

Click this button may halt updating the operator guide message display for 5 seconds. Click this button again may restart display update.

This button calls up the Filter dialog box.
In the Filter dialog box, Operator Guide view filter conditions, such as displaying operator guide messages from a specific control station or function block, can be specified. The specified filter conditions will be displayed in the status bar of the Operator Guide view.

Message Display Area of the Operator Guide View
The operator guide messages that have occurred are displayed in order from the latest messages, in the Operator Guide view Message Display area. A maximum of 40 operator guide messages is saved. If the number of operator guide messages occurred exceeds 40, the messages will be deleted starting with the oldest one that has been acknowledged. When there are no acknowledged operator guide messages, the oldest ones that are unacknowledged are deleted.
The figure below shows an example of a display format for the message display area.

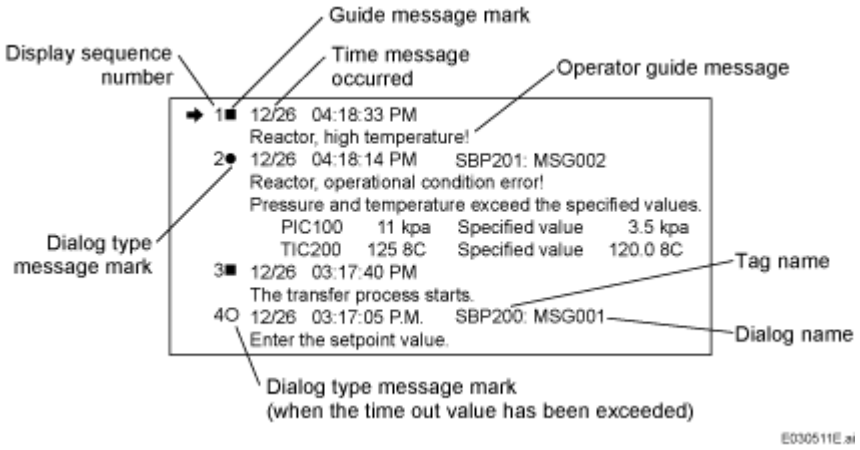


Figure: Message Display Area of the Operator Guide View

•Display sequence number
Numbers 1 through 40 are displayed.

•Operator guide message mark
This mark indicates whether the operator guide message is a guide message or a dialog message.
When the time-up value (a period of time specified for the time between message initiation and operator acknowledgment) specified in SEBOL is reached and the dialog message is canceled from the control station, the dialog type message mark automatically changes from a black circle to a white circle.
Also, the status of the mark indicates if the operator guide message has been acknowledged or not.
Flashing: Unacknowledged operator guide message
Static: Acknowledged operator guide message

•Message occurrence Date/time stamp
Displays the date/time when the message occurred.

•Operator guide message
Displays the operator guide message defined by the Operator Guide Builder or SEBOL.

•Tag name
For a dialog message, the tag name of the function block, origin of the operator guide message is displayed.

•Dialog name
For a dialog message, the dialog name attached for identifying the operator guide message is displayed.

Status Bar of the Operator Guide View
The following items are displayed in the Operator Guide view status bar.
•Window display range selected in the Filter dialog
•Number of displayed messages, number of generated messages

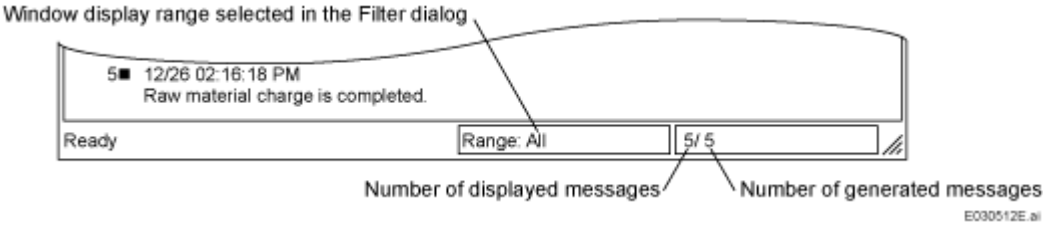


Figure: Status Bar in the Operator Guide View

6.3. Filter and Display Operator Guide Messages

With the condition set in the filter dialog box, the filtered messages can be displayed separately from the display of the entire messages.

Splitting Operator Guide View
With a horizontal split, a window can be displayed into two frames. The filtered messages are displayed in the top frame while the whole messages are displayed in the bottom frame.
An example of the Operator Guide view split is shown as follows:

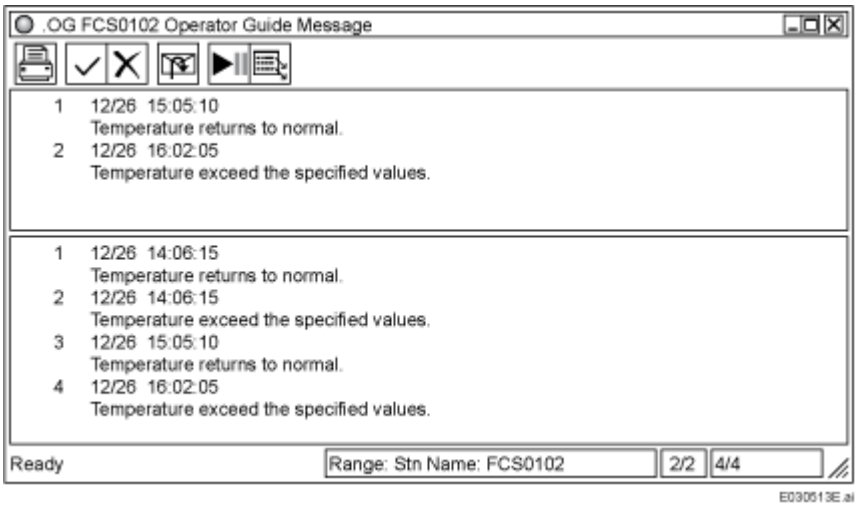


Figure: Operator Guide View Split

Switching Active Frame
The active frame can be switched from top frame to bottom frame or vice versa by pushing the [Tab] key on the keyboard or using the mouse to clink the frame area. The active frame, either top frame or the bottom frame, will be enclosed with a highlighted border. The operations of acknowledging, deleting or printing the messages are valid only for the messages in the active frame.

Move Split Bar
The window split bar can be moved up to the second line of the message area or moved down next to the status bar.

Status Bar
The status bar of the message window indicates the following information:
•Number of the filtered messages
•Number of messages in the top frame, Total number of filtered messages; Number of messages in the bottom frame, Total number of occurred messages.

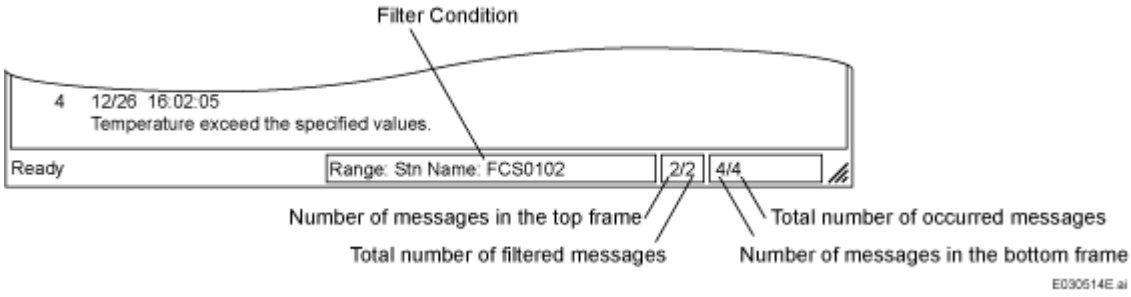


Figure: Status Bar of Operator Guide View

Operator Guide Message Filter Dialog Box
The Filter dialog box may be called up using the toolbar button shown below.

The figure below shows an example of the operator guide message Filter dialog box.

Figure : Operator Guide Message Filter Dialog Box

The following key words may be used when searching for operator guide messages:
•All
Displays all operator guide messages.

•FCS Name
Displays the operator guide messages initiated from the specified control station.

•Equipment Name
Displays operator guide messages initiated from the specified control drawing, and unit instrument tag.
The plant hierarchy can be selected and searched in the dialog box as shown below which is called up by clicking the button to the right of the text box. Select the hierarchy name and then click the [OK] button to display the name of the selected hierarchy in the text box.

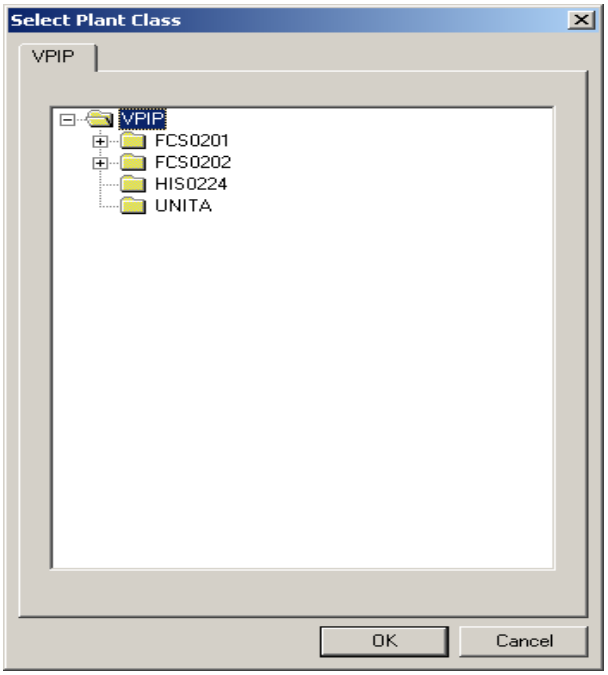


Figure: Select Plant Class Dialog Box

•Tag Name
Displays operator guide messages related to the specified function block.

•Batch ID
Displays operator guide messages related to the specified batch ID.

6.4. Operator Guide Individual Acknowledgment Window

The Operator Guide Individual Acknowledgment window displays only one particular operator guide message. This is used to acknowledge the operator guide message or respond to a dialog message. The guide messages and dialog messages are displayed in a variety of formats according to the types of operator guide message.

Display Content of Operator Guide Individual Acknowledgment Window

The display in the Operator Guide Individual Acknowledgment window varies with the status when the window is called up.

•When a function block is selected and the Operator Guide Individual Acknowledgment window is called up
The most recent alarm message generated by the selected function block is displayed.

•When called up from the Operator Guide view toolbar
Only the selected message currently displayed in the Operator Guide view is displayed.

Components of the Operator Guide Individual Acknowledgment Window

The Operator Guide Individual Acknowledgment window consists of a message display area, acknowledgment button and delete button.

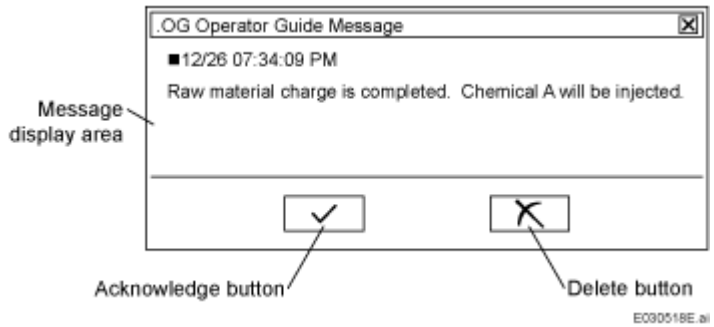


Figure: Operator Guide Individual Acknowledgment Window for a Guide Message

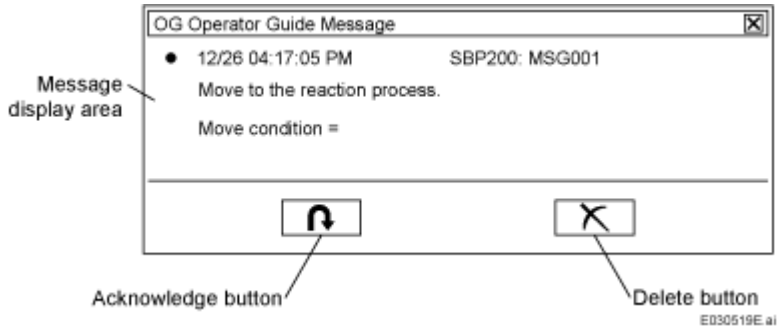


Figure: Operator Guide Individual Acknowledgment Window for a Dialog Message

7. MESSAGE MONITOR WINDOW

The Message Monitor window displays time series operation record messages.

7.1. Outline of the Message Monitor Window

Only specified messages are acquired and displayed in the Message Monitor window for real time acknowledgment of the occurrence.

The following figure shows an example of the Message Monitor window.

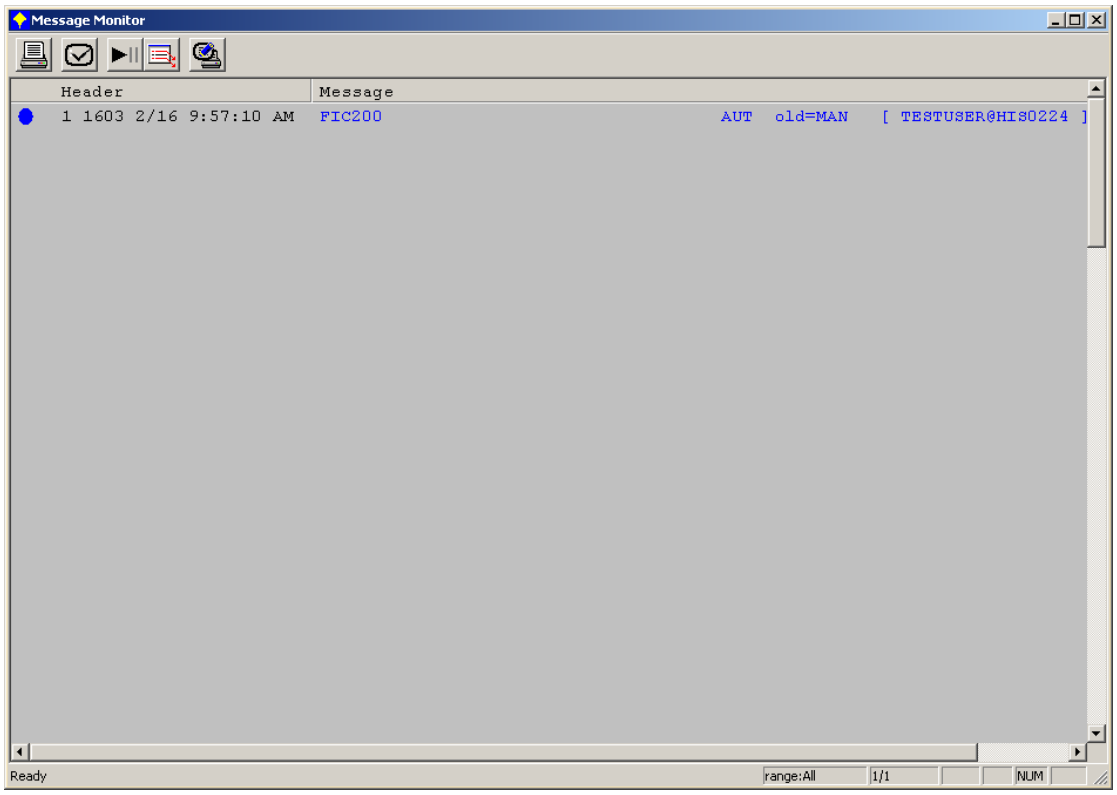


Figure : Message Monitor Window

When the CAMS for HIS is enabled, the action of the Message Monitor window will be partially changed.
•If a message is defined as Disabled on the Configurator of CAMS for HIS, it will not be displayed.
•Displays the messages sent through OPC.

7.2. Components of the Message Monitor Window

The Message Monitor window consists of a toolbar, the message display area, and a status bar.

Toolbar of Message Monitor Window

By operating the toolbar in the Message Monitor window, a currently displayed message can be acknowledged, and the Message Registration dialog box can be called up.

Figure: Toolbar of Message Monitor Window

The following describes the buttons on the toolbar in the Message Monitor window:

This button prints out all displayed messages.

This button acknowledges all unread messages displayed at one time. Note that equalization with other HISs will not take place.

This button maintains a displayed message for five seconds without updating it. Click this button again to update the displayed message.

This button calls up the Filter dialog box.
The Filter dialog box is used to specify the filter conditions for displaying a message for a specific control station or an arbitrary message in the Message Monitor window.
The specified filter conditions are displayed on the status bar in the Message Monitor window.

This button calls up the Message Registration dialog box.
The Message Registration dialog box is used to register the type of a message to be displayed in the Message Monitor window and the number of messages to be stored.

Message Display Area of the Message Monitor Window
The message display area of the Message Monitor window displays in the LIFO manner messages that have occurred. The number of messages to be stored is specified in the Message Registration dialog box. If the number of messages that have occurred exceeds the number of messages to be stored, the messages are deleted in the order they were stored and acknowledged. If none of the stored messages have been acknowledged, they are deleted in the order they were stored.
If a new message is received while the Message Monitor window is being called up, the message is added to the Message Monitor window.
The following figure shows the display format of the message display area.

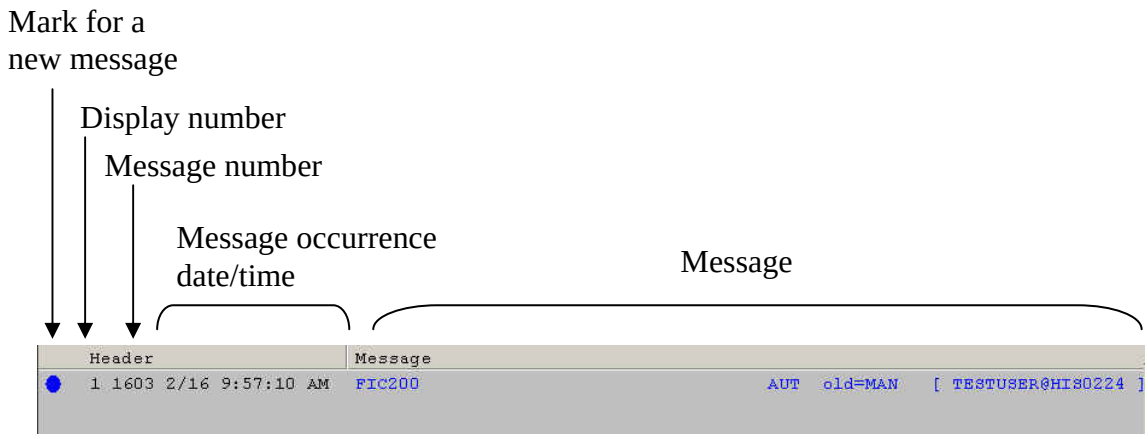


Figure: Message Display Area of the Message Monitor Window

•Mark for a new message
This mark is added to an unacknowledged message. The mark for a new message turns off upon the acknowledgment of the message in the Message Monitor window.

•Display number
The display numbers are displayed in the ascending order starting with 1.

•Message number
This number is used to identify a message. This number cannot be specified by the user; it is pre-defined by the system.

•Message occurrence date/time
The date and time when a message occurred are displayed.

•Message
A message is displayed in color specified and registered by the user.

Status Bar of the Message Monitor Window
The status bar in the Message Monitor window displays the following items:
•Window display range selected in the Filter dialog box
•The number of messages to be displayed and the number of messages that have occurred

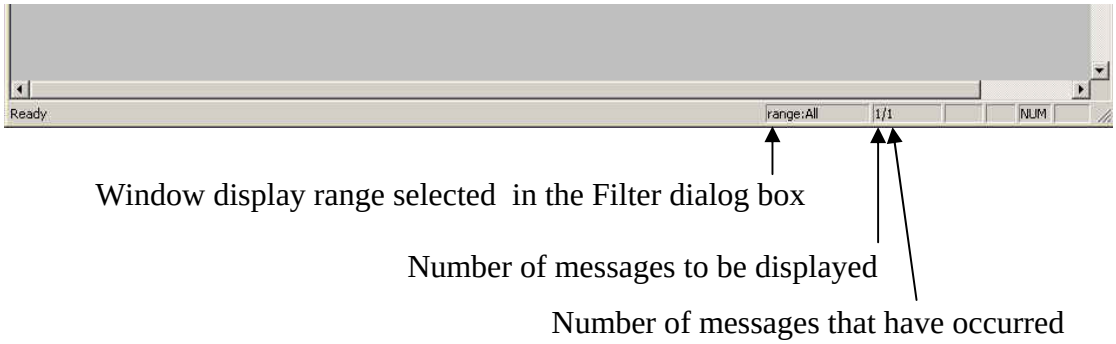


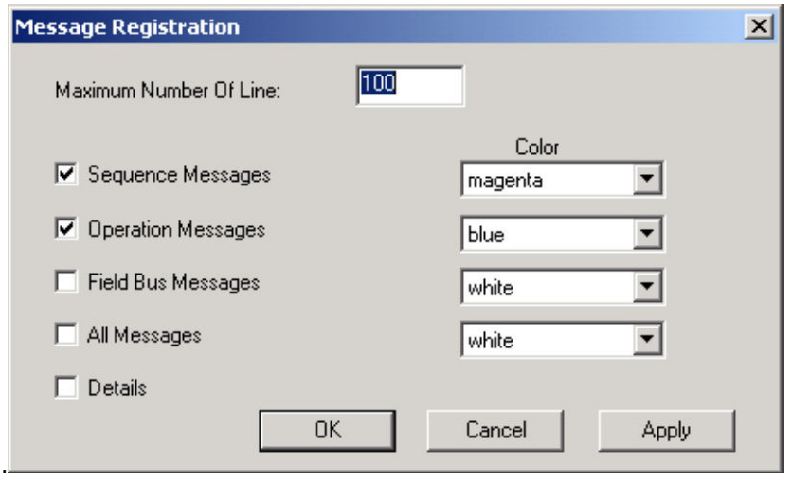
Figure: Status Bar of the Message Monitor Window

7.3. Message Registration

A message to be displayed in the Message Monitor window is specified in the Message Registration dialog box.

Message Registration Dialog Box
The Message Registration dialog box is used to specify the types and number of messages to be displayed. A display color for each type of a message can also be specified.
The Message Registration dialog box is called up by clicking the following button on the toolbar:

The figure below shows an example of the Message Registration dialog box.



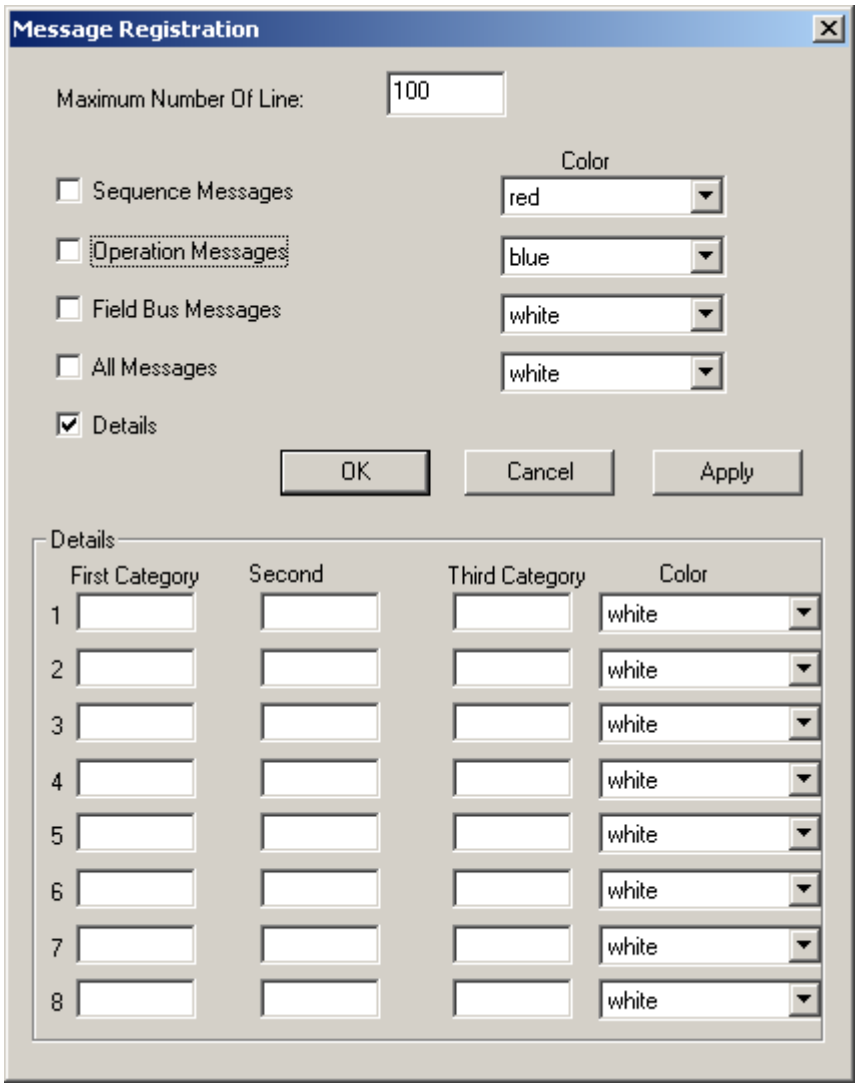


Figure: Message Registration Dialog Box

Maximum Number of Line
The number of messages to be stored in the Message Monitor window is specified. Up to 200 messages can be stored, with the default setting being 100.

Specifying too large a number increases the load; the specified number should be the default setting of 200 or lower.

Message Types and Color
The message types and colors to be displayed in the Message Monitor window are specified. A display color for each type of a message can be specified.
Of messages stored in the historical message save file, the following types of messages can be displayed in the Message Monitor window.
Note that selecting all types of messages takes up the entire memory capacity. It is recommended not to select all types of messages during normal operation.

•Sequence Messages
Messages for the sequence control such as operation guide messages, print messages, etc are displayed.

•Operation Messages
Messages related to process and batch operation records are displayed.

•Field Bus Messages
Messages related to the fieldbus are displayed.

•All Messages
All messages that have occurred are displayed.

•Details
In [Details], messages are classified into the First, Second, and Third categories.

Even if the same message is registered in multiple categories, the message can be displayed in only one category. In this case, the message is displayed in the color specified in [Details]. If the same message is registered in multiple categories in [Details], the message is displayed in the color registered first.

Other Messages
To specify major, medium and small categories, use alphabets for each message. The table below shows the categorization by message.

Table: Categorization by Message (1/2)

Major Category	Medium Category	Small Category
BSYS (System Alarm)	MFCS (System Alarm in the FCS)	SALM (Alarm)
		SRCV (Recovery)
		SSTS (Status Change)
	MCOM (System Alarm related to Communications and BCV)	Null
	MMNT (Maintenance)	SEQZ (Equalization Notification)
		SEQER (Equalization Error)
	MOPE (System Operation Record)	Null
	MAPP (System Alarm from Applications)	SALM (Alarm)
		SRCV (Recovery)
BPRO (Process Alarm)	MBLOCK (Function Block Alarm)	SALM (Alarm)
		SRCV (Recovery)
		SRALM (Re-alarm)
		SNR (Normalized)
	MANN (Annunciator Alarm)	SALM (Alarm)
		SRALM (Re-alarm)
		SNR (Normalized)
	MSTS (Function Block Status Change)	SMODE (Mode Change)
		SAOF (AOF Change)
		SAON (AON Change)
	MRECP (Recipe Status Change)	SSTS (Recipe Change Message)
		SUNIT (Unit Recipe Change Message)

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Table: Categorization by Message (2/2)

Major Category	Medium Category	Small Category
BSEQ (Sequence Message)	MOPG (Operator Guide Message (Guide Message))	Null
	MDLG (Operator Guide Message (Interactive Message))	Null
	MPRT (Print Message)	Null
	MREQ (Sequence Message Request)	Null
	MVO (Voice Message)	Null
	MM3 (Supervisory Computer Event Message for PICOT)	Null
BOPE (Operation Message)	MPRO (Process Operation Record)	SDATA (Data Entry)
		SMODE (Mode Change)
		SACK (Function Block Alarm Acknowledgment)
		SDLG (Dialog Entry)
	MRECP (Batch Operation Record)	SDATA (Data Entry)
		SSTS (Recipe Data Entry)
	MTREND (Trend Aquisition Record)	Null
	MAPP (Arbitrary Application Operation Record (such as OPC))	Null
BFFB (Fieldbus)	MFDV (Field Device Error)	SALM (Alarm)
		SRCV (Recovery)
	MACF (ACF11)	SALM (Error)
	MDVA (Device Alarm)	SALM (Alarm)
		SRCV (Recovery)
		SUPD (Update)
	MDVPA (Device Process Alarm)	SALM (Alarm)
		SRCV (Recovery)
	MDVE (Device Event)	Null

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An asterisk (*) may be specified for a message category. In this case, all items included in the specified category are displayed on the Message Monitor window.

Example 1
When you specify [*] for a major category, all messages in “System Alarm,” “Process Alarm,” “Sequence Message,” “Operation Message” and “Fieldbus” categories are displayed.

Example 2
When you specify BSYS (System Alarm) as a major category and [*] for a medium category, all messages (MFCS, MCOM, MMNT, MOPE and MAPP) included in the System Alarm category are displayed.

Example 3
When you specify BOPE (Operation Message) as a major category, MPRO (Process Operation Record) as a medium category, and [*] for a small category, all messages (SDATA, SMODE, SACK and SDLG) in the Process Operation Record category in the Operation Message category are displayed.

7.4. Filter and Display Messages

The Filter dialog box can be used to display only a specific message.

Message Filter Dialog Box

The Filter dialog box is called up by clicking the following button on the toolbar:

The figure below shows an example of the Filter dialog box in the Message Monitor window.

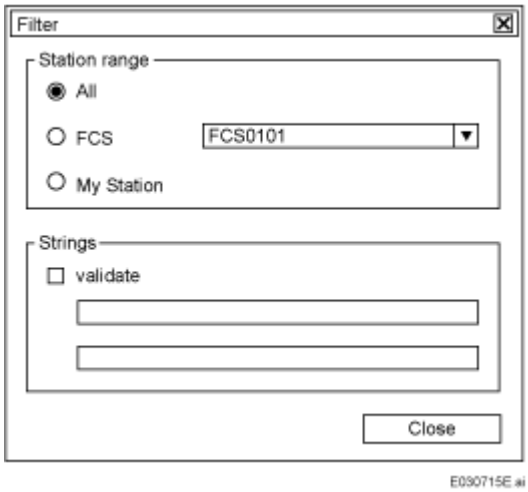


Figure: Filter Dialog Box in Message Monitor Window

A message can be searched for by the following keywords:

•All

All messages are displayed.

•FCS

Messages that have occurred in the selected control station are displayed.

•My Station

Messages that have occurred in the current station are displayed.

•Strings

An arbitrary character string can be specified with up to 16 double-byte characters or 32 single-byte characters. [*] cannot be used as a wild card.
Two fields are provided to specify arbitrary characters. When characters are specified in both fields, messages are searched for on the AND condition.

8. BROWSER BAR

The Browser Bar is displayed in the left or right side of the screen, and has the role as the launcher to call up various operation and monitoring windows. It also helps the user to have a general view of the system by showing the tree structures of the operation and monitoring windows and the plant organization.

Browser Bar can be minimized on the edge of the screen, and be opened for use when it is needed.

8.1. Outline of Browser Bar

The Browser Bar consists of various toolboxes and provides various functions to call up the desired operation and monitoring windows efficiently.
In each toolbox, the following operations can be done.

Overview Toolbox
The Overview toolbox has the following tabs.

•View tab
The window hierarchy of the operation and monitoring windows is displayed in a tree structure.
The status of each window (alarm occurrence status) can be checked with icons.
Double-clicking a node on the tree can call up the target window.

•Trend tab
The configuration of the trend blocks defined with the trend acquisition definition builder is displayed in a tree structure.
Double-clicking a tag on the tree can call up the corresponding faceplate.
Trend acquisition pens can be assigned to a Trend view for display.

•Plant hierarchy tab
The plant hierarchy definition information set with the builders is displayed in a tree structure.
Double-clicking a node on the tree can call up the corresponding window.

•Favorites
The shortcuts to the frequently-used windows shown in the hierarchical trees displayed in the View, Plant hierarchy, and Trend tabs can be registered as "favorites".

•Search
From the information displayed on each tab, the items that match the specified search condition can be searched for.

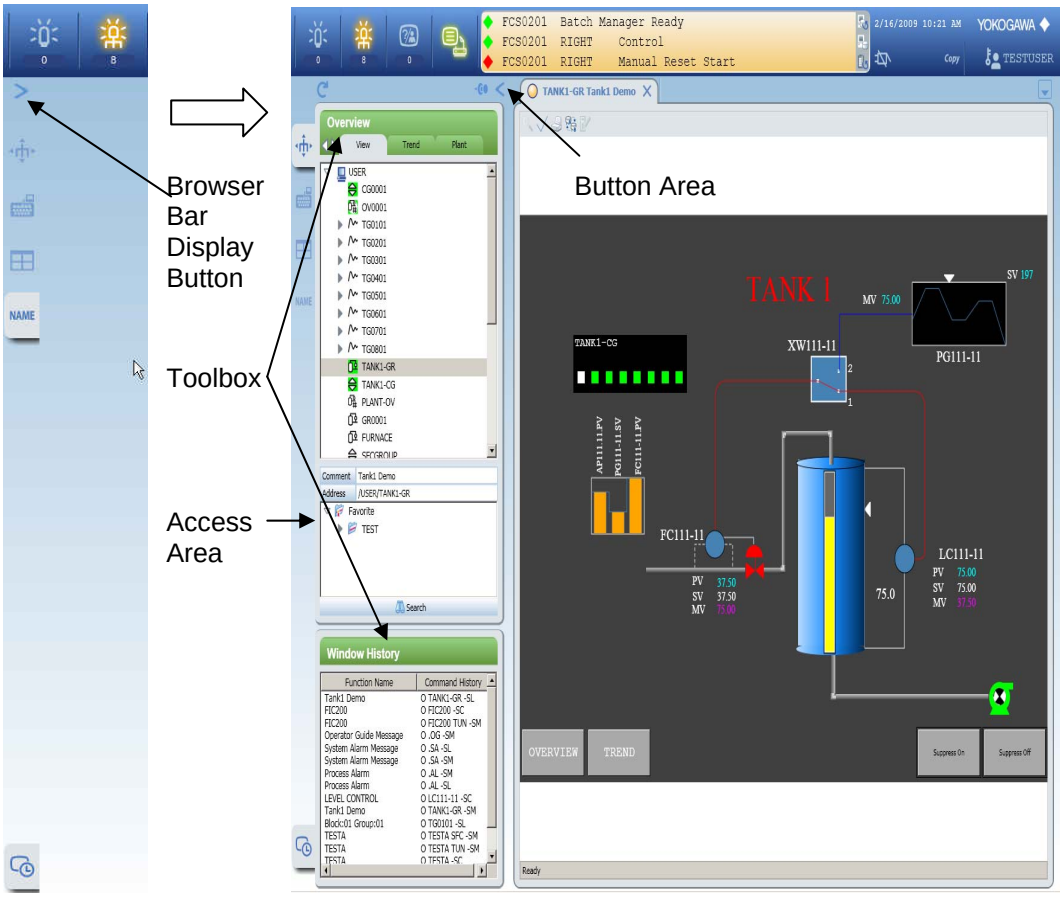
Preset Menu Toolbox
The frequently used functions can be registered in the preset menu and executed easily.

Tool Button Toolbox
The operation and monitoring windows can be called up and operated by the displayed tool buttons.

Name Input Toolbox
By entering a window name or tag name, the corresponding operation and monitoring window can be called up.

Window History Toolbox
The call-up history of windows/views/frames is displayed. The windows/views/frames can be called up from the history again.
The Browser Bar consists of the access area, toolbox area, and button area.

The figure below shows an example of the Browser Bar.



Minimized Opened

Figure: Browser Bar

The Browser Bar is not included in the number of displayable operation and monitoring windows

Display Style of Browser Bar
The Browser Bar will not be overlapped by the System Message Banner.
With the initial setting, it is always displayed in the left side of the screen. It can be displayed in the right of the screen by the setting in the HIS Setup Window.

The Browser Bar can be displayed in following three styles, each of which can be selected according to the usage.

Minimized
The Browser Bar is closed. Only the access area is displayed.

Overlapping
The Browser Bar is displayed overlapping the Container Window.

Pinned
The Browser Bar is displayed so as not to overlap the Container Window.

8.2. Components of Browser Bar

The Browser Bar consists of the access area, the toolboxes, and the button area.

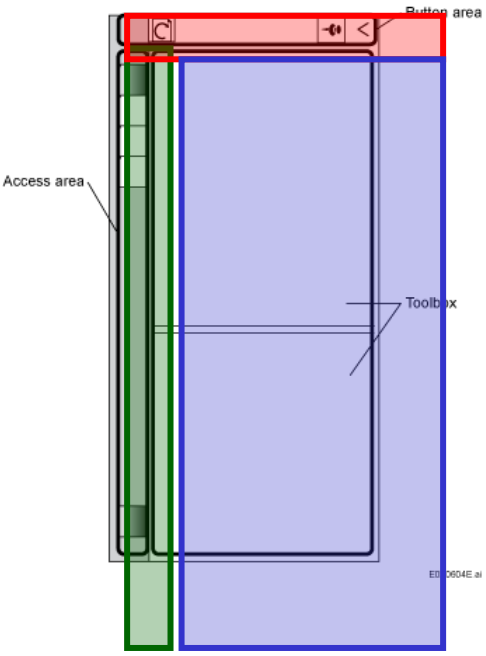


Figure: Configuration of Browser Bar

Access Area of Browser Bar
The access area is always displayed even if the Browser Bar is closed.
The labels of individual toolboxes are displayed in the access area. Clicking a label displays the corresponding toolbox. The correspondence between labels and toolboxes is shown below.

 Overview Toolbox

 Preset Menu Toolbox

 Tool Button Toolbox

Name Input Toolbox

 Window History Toolbox

8.3. Overview Toolbox of Browser Bar

The Overview toolbox displays the following three kinds of information in tree structures.
•Window Hierarchy
•Plant Hierarchy
•Trend Data Acquisition Configuration
Double-clicking a node (*1) on the tree can call up the corresponding operation and monitoring window.
*1:Each element composing the tree displayed in the Overview toolbox is called a "node"

Configuration of Overview Toolbox
The Overview toolbox consists of the Overview area having three tabs and the area common to the tabs.

•Overview area
This area displays the window hierarchy, the trend data acquisition configuration, and the plant hierarchy. It consists of the following tabs.
-View tab
-Trend tab
-Plant tab

•Area common to tabs
When a node in the Overview area is selected, the comment on that node and its location in the tree structure are displayed.
The [Search] button executes searching based on the search condition. The scope of searching is the information displayed in the Overview area.
The Favorites folder is for storing shortcuts to the nodes displayed in the Overview area.

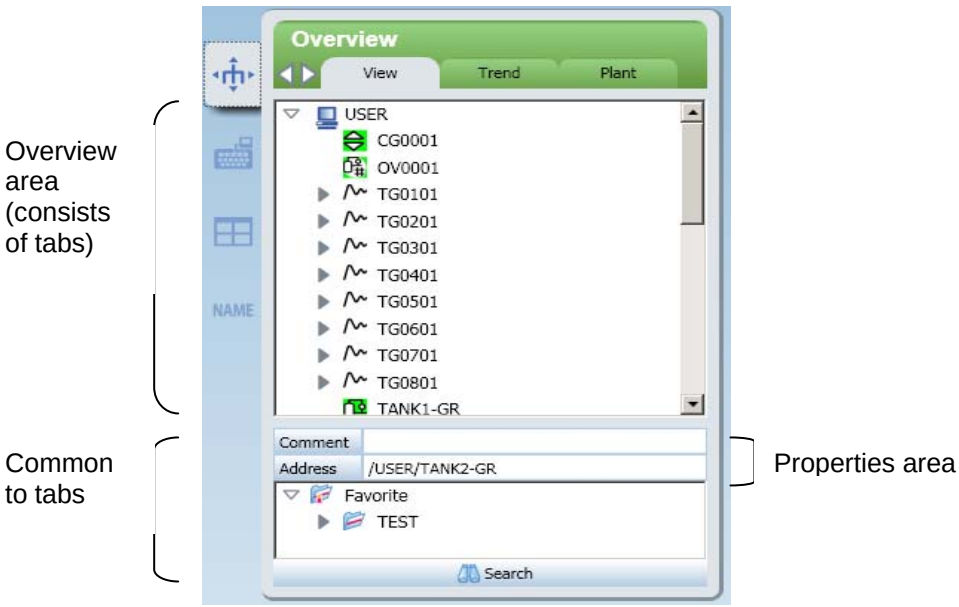


Figure: Layout of Overview Toolbox

Figure: Plant Tab

8.4. Preset Menu Toolbox of Browser Bar

In the Preset Menu toolbox, the user can freely register the functions assignable to the function keys. The preset menu can be registered in the HIS Setup Window.

The figure below is an example of the Preset Menu toolbox.

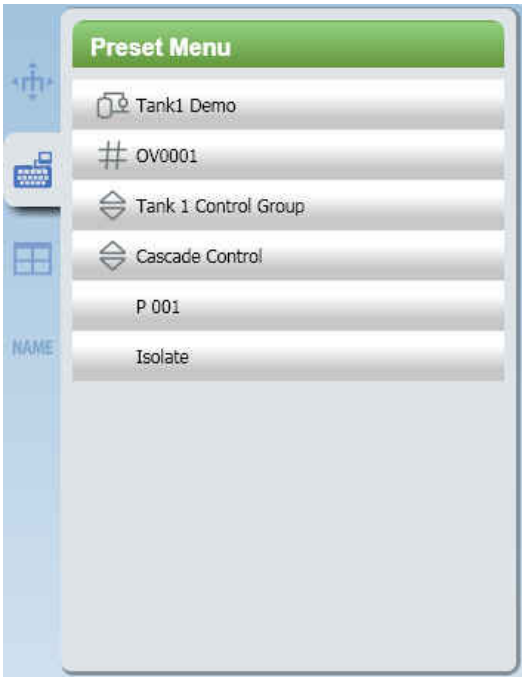


Figure: Preset Menu toolbox

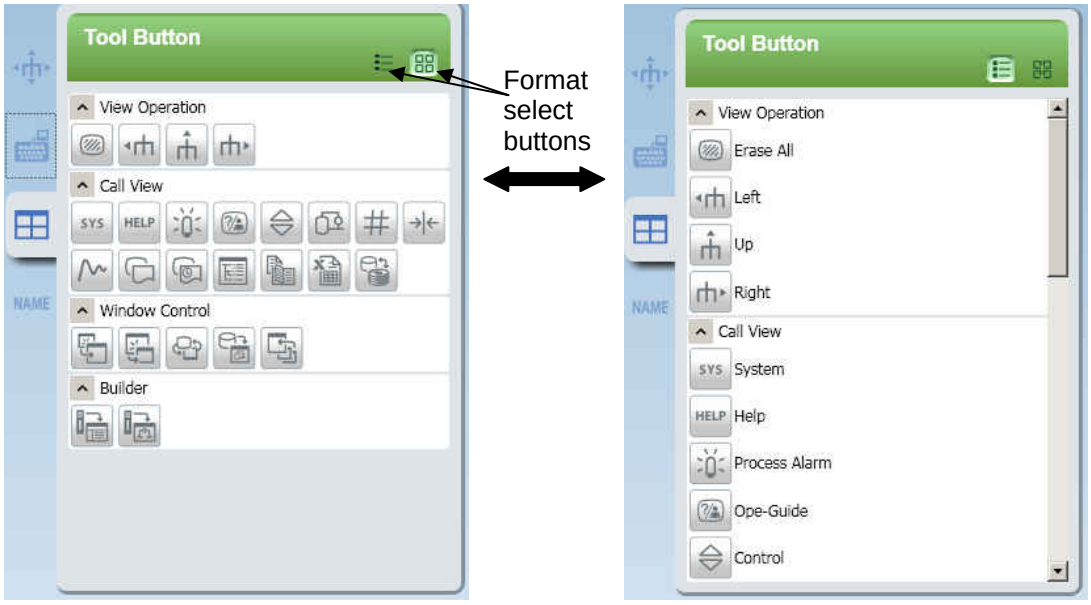
When the preset menu is registered in the HIS Setup window, the buttons are displayed in the preset menu toolbox. The HIS need not be restarted.
Clicking each button executes the registered function.
The size of icons of the preset menu can be selected from Small/Standard/Large by the setting in the Browser Bar tab of the HIS Setup window.

8.5. Tool Button Toolbox of Browser Bar

Buttons for calling up views and operating windows are displayed in the Tool Button toolbox. The following two display formats can be switched by the format select buttons.

•Icons: Displays tool buttons only.
•List: Displays tool buttons and the description.

The figure below is an example of the Tool Button toolbox.



Icons Display List Display

Figure: Tool Button Toolbox

The following operations can be performed using the tool buttons.

•Calling up windows
•Window operation
•Calling up builders

The size of the tool buttons can be selected from Small/Standard/Large by the setting in the Browser Bar tab of the HIS Setup window.

List of Tool Buttons
The following table shows the tool buttons displayed in the Tool Button toolbox and their functions.

Table : Tool Buttons

Button	Description
	Closes all windows except the System Message Banner.
	Calls up the hierarchy windows of the active window in ascending order of the sequence defined in the window hierarchy.
	Calls up the upper window of the active window.
	Calls up the hierarchy windows of the active window in descending order of the sequence defined in the window hierarchy.
SYS	Calls up the System Status Overview view.
HELP	Calls up the Help window for the active operation and monitoring window.
	Calls up the Process Alarm view.
	Calls up the Operator Guide view.
	Calls up the Graphic view with control attributes.
	Calls up the Graphic view with graphic attributes.
#	Calls up the Graphic view with overview attributes.
	Calls up the Tuning view.
	Calls up the Trend view.
CAMS	Calls up the Consolidated Alarm Management view. Displayed only when the CAMS for HIS is installed.
	Calls up the Process Report view.
	Calls up the Historical Message Report window.
	Calls up the System View.
	Calls up the Recipe View.
	Calls up the Report Package.
	Calls up the Long-Term Data Archive dialog box.
	Calls up the active operation and monitoring window in large size.
	Calls up the active operation and monitoring window in medium size.
	Calls up the image window.
	Toggles between the front and back positions of the operation and monitoring windows and the Windows general application windows.
	Switches the active window in sequence when multiple operation and monitoring windows are displayed.
	Calls up the builder related to the active operation and monitoring window.
	Calls up the control drawing builder for the active operation and monitoring window.

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Some windows may not be called up depending on the privilege level of the user.

8.6. Name Input Toolbox of Browser Bar

In the Name Input toolbox, windows can be called up by entering the window name (view name) or the tag name.

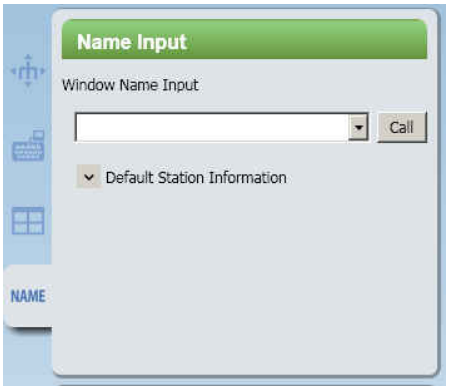

Figure: Name Input Toolbox

In the Name Input toolbox, the following operations can be done.
•Calling up windows
If the window has been called up before, it can be also selected from the pull-down menu.
•Setting default control station information

8.7. Window History Toolbox of Browser Bar

Up to 30 calls of views/windows/frames are listed in the Window History toolbox. When the line of the display history log is double-clicked, the corresponding view or window is called up. When it exceeds 30 calls, it is deleted from the oldest first one and the latest information is added. Moreover, not only calling up from the Browser Bar but also any other window call-up operations done in Graphic views and by the operation keyboard, etc. are listed as the window history.

In multiple-monitor configuration, window history of each monitor is displayed on each monitor.

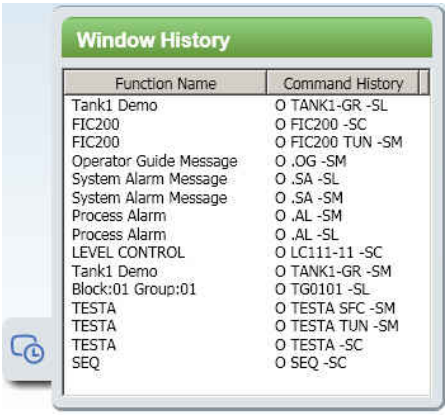

Figure: Window History Toolbox

The following information is displayed as window history. If the same window has been called up repeatedly, only one is line is displayed in the history.

•Function Name

Window names or function names are shown.

•Command History

The strings of the window call-up commands internally executed by the system are displayed.

Example: O GR0001 –SL

This indicates that the large-size Graphic view GR0001 was called up.

Example: G FRLT01 '1=.AL, 2=TG0101'

This indicates that the frame consisting of the Process Alarm view in the upper part and the Trend view TG0101 in the lower part were called up.

The columns of the function name and the command history can be swapped by dragging the header.

8.8. Displaying Browser Bar Using the Operation Keyboard

Pressing the following keys on the operation keyboard displays the Browser Bar in the following states.

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Displays the View tab of the Overview toolbox.

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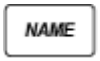
Displays the Tool Button toolbox in the upper part and the Preset Menu toolbox in the lower part.



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Displays the Name Input toolbox.

9. INSTRUMENT FACEPLATE

The instrument faceplate displays the status and data of a function block, an instrument or contact I/O graphically and compactly on a window.

9.1. Overview

The instrument faceplates are displayed on a Graphic view or a Faceplate view. When displayed on a Graphic view, the instrument faceplate may be displayed in normal format or in compact format. The display format may switched between the two freely.
The faceplates of the function blocks are classified into the following display types.
The display types are grouped according to their display characteristics, shown as below.

•Analog type
Such as PID controller block family and Three-Pole Three-Position Selector Switch Block (SW-33).

•Discrete type
Such as Three-Position Motor Control Block (MC-3), Switch Instrument Block with 1 Output (SO-1) and Batch Status Indicator Block (BSI).

•Faceplate block type
Such as Extended 5-Push-Button Switch Block (PBS5C), Triple-Pointer Manual Station Block (INDST3) and Extended Hybrid Manual Station Block (HAS3C).

•Data display type
Such as Sequence Table Block (ST16).

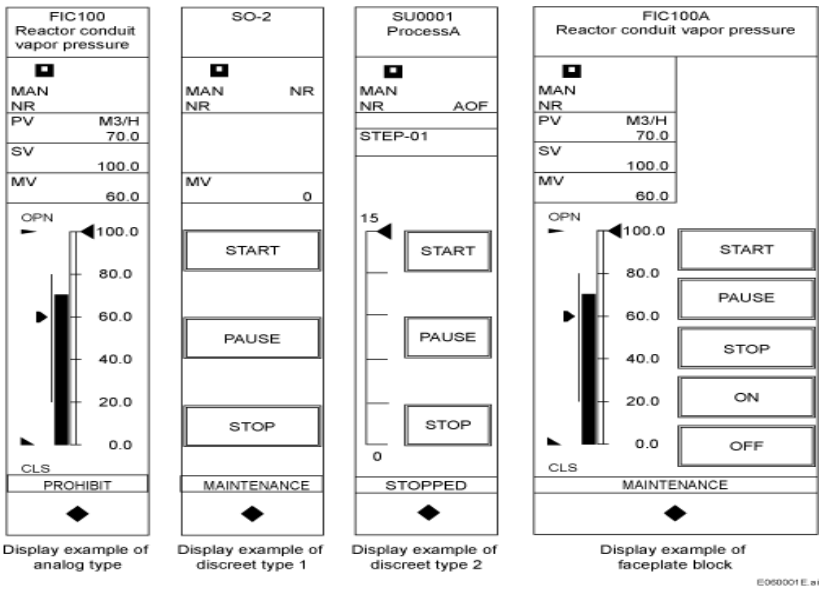

Figure: Instrument Faceplates

Types of Faceplate Operations
The status and parameters of the function blocks displayed on the instrument faceplates may be changed. The following operations may be performed on faceplate.
•Manipulates data value by INC/DEC key
•Changes block mode
•Entering data
•Enables manipulating the setpoint value

Faceplate Operation Property
For the faceplate displaying discrete instrument, the operation property to activate the push buttons may be selected between 2-push or 2-step types.

9.2. Components of Instrument Faceplate

The instrument faceplate consists of the following components:

- •Comment display area
- •Status display area
- •Parameter display area
- •Instrument display area
- •Operation mark
- •Data input dialog box call button

The following figures show examples of instrument faceplates with the name of each item indicated.

The instrument faceplate consists of the following components.

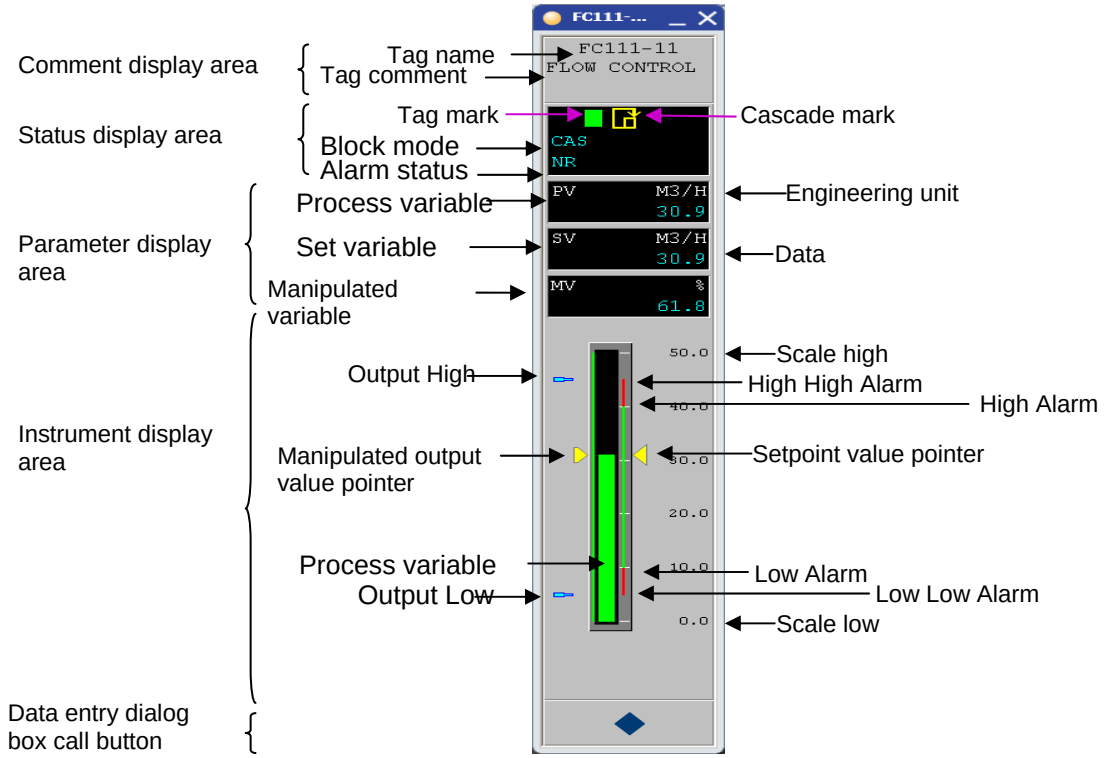

Figure: Components of Instrument Faceplate (1/2)

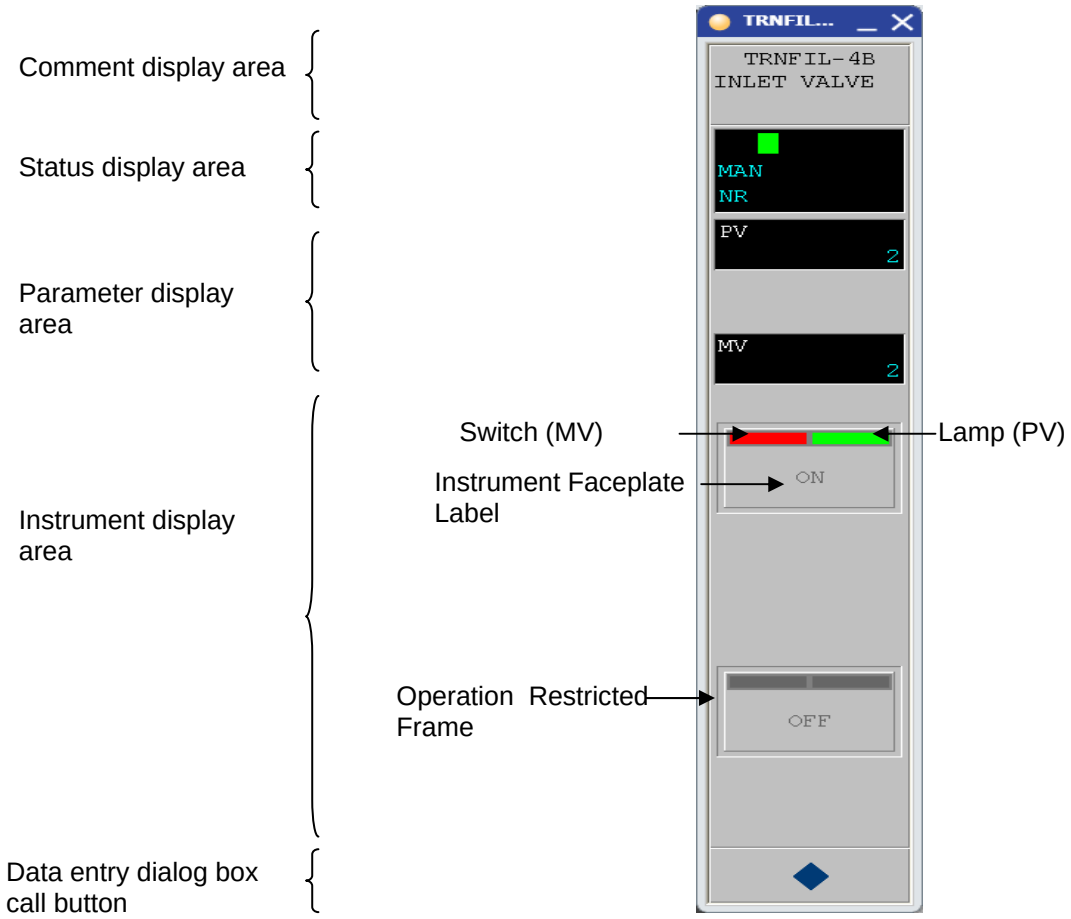

Figure: Components of Instrument Faceplate (2/2)

The following section describes each component displayed in the instrument faceplate.

Tag Name - Comment Display Area
The tag name assigned to the function block is displayed on the instrument faceplate.

Tag Comment - Comment Display Area
The tag comment assigned to the function block is displayed on the instrument faceplate.
The user can specify a desired tag comment.

Tag Mark - Status Display Area
This mark indicates the tag priority level of the displayed function block. All function blocks are provided with tag marks to reflect their priority levels.
The table below shows the relationship between tag marks and tag priority levels:

Table: Tag Marks and Tag Priority Levels

Tag mark	Priority
■	Important tag
■	Ordinary tag
■	Auxiliary tag 1, auxiliary tag 2

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The user can specify whether the priority for each tag mark should be acknowledged or not. This specification can be performed to suit the user's needs, regardless of the user security.
The display color of the tag mark indicates the alarm status of the function block.
The table below shows the relationship between tag mark display colors and alarm status:

Table: Tag Mark Display Colors and Alarm Status

Color	Process status	Example of the alarm status
Blue	Alarm output off	AOF
Red	Alarm occurrence	LO, HI, IOP, LL, HH, OOP
Yellow	Alarm occurrence	±DV, VEL, VEL, MLO, MHI
Green	Normal	NR
White	Function block that has no alarm function	-
Gray	Communication Error	-

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The occurrence of process alarm and the annunciator message can be indicated by the status of Tag Mark.
•Flashing red:
Alarm message has been initiated but not been acknowledged.
•Flashing green:
Alarm recovery message has been initiated but not been acknowledged.
•Constant red or green:
Alarm message or Alarm recovery message has been initiated and acknowledged.

Cascade Mark - Status Display Area
This mark indicates that the function block displayed on the instrument faceplate may be set to cascade mode.
To display the cascade mark, set it in the Function Block Details Builder.
However, the definition may be set AUTO to let system decide according to function block's real connection.

CMP Mark - Status Display Area
This mark indicates that the block mode of the function block displayed on the instrument faceplate is RCAS (remote cascade) or ROUT (remote output). To display the CMP mark, set it on the Function Block Details Builder.

Instrument Mark - Status Display Area
This mark indicates the type of the function block displayed on the instrument faceplate. So far only Self-Tuning PID Controller Block (PID-STC) is provided with this mark.
•ST: Self-Tuning PID Controller Block

Block Mode - Status Display Area
The block mode and block status of the function block is displayed on the instrument faceplate.

Block Status - Status Display Area
The block status of the function block is displayed on the instrument faceplate.

Alarm Status - Status Display Area
The alarm status of the function block is displayed on the instrument faceplate.

Calibration Status - Status Display Area
The calibration status of the function block is displayed on the instrument faceplate.
When the displayed function block is in the calibration state, [CAL] is displayed in cyan.
[CAL] disappears when the block is not in the calibration state.

Alarm ON/OFF Status - Status Display Area
The alarm ON/OFF status of the function block is displayed on the instrument faceplate.
When the block is in the alarm OFF state, [AOF] is displayed in blue. [AOF] disappears when the block is in the alarm ON state.

Data Item Name - Parameter Display Area
The name of the data items (PV, SV, MV, etc.) defined to the function block are displayed.

Manipulated Output Value (MV) Displays on Faceplate
The manipulated output value (MV) may be displayed in percentage (%) or real amount. The real amount display is the same way as process variable (PV) and setpoint value (SV) that reflects the amount in a specific engineering unit. When displayed in percentage (%), the MV is converted into percentage and displayed in %MV. The display may be defined on the Function Block Details Builder. When % display is defined, the following parameters are displayed in percentage (%).
MV, OPHI, OPLO, MH, PMV

Engineering Unit Symbol - Parameter Display Area
The engineering unit symbol is a unit symbol attached to a data value including a flowrate and pressure, and is used on all the projects.
Up to 256 engineering unit symbols can be used for one project.
One engineering unit symbol can be defined with up to six alphanumeric characters or three double-byte characters.

Setting the Auto or Manual Mode
The engineering unit symbol can be set either automatically or manually.
•Auto mode
Direct entry into the engineering unit symbol field in the Function Block Detail Builder will automatically define the engineering unit symbol. The Engineering Unit Symbol Builder can also be used to define the symbol.

•Manual mode
The engineering unit symbol can only be defined in the Engineering Unit Symbol Builder.
Use the System View to switch between the auto and manual modes.
Use the Detailed Setting tab of the project properties to switch between the modes. Check the corresponding check box to select the manual mode.

Index - Instrument Display Area
This mark indicates the referenced output value of a controller block. Show/Hide the index can be specified on the Function Block Details Builder.

Manipulated Output Value Pointer, Setpoint Value Pointer - Instrument Display Area
The manipulated output value pointer on the left of the instrument faceplate indicates the manipulated output value (MV) and the setpoint value pointer on the right indicates the setpoint value (SV). The color of the pointers changes according to the operation status (block mode) of the function block and the status of the target key of the operation keyboard, indicating whether the operator can operate these variables or not. When the MV and SV are manipulated by the operator, the pointers turn to red. When they are not manipulated, they turn to yellow.

Table: Changes in the Pointer Color

Pointer	Block mode	Target key	Pointer display color
Manipulated output value pointer	MAN RCAS-MAN ROUT-MAN	OFF	Red
		ON	Yellow
	MAN-TRK	OFF	Cyan
		ON	Yellow
	Other than above	-	Yellow
Setpoint value pointer	MAN RCAS-MAN ROUT-MAN	OFF	Yellow
		ON	Red
	AUT RCAS-AUT ROUT-AUT	-	Red
	Other than above	-	Yellow

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When the MV or SV is in the clamp state, a clamp mark [C] is displayed on the pointer.

Normal Clamp

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Figure: Pointer Status

Process Variable Bar - Instrument Display Area
The process variable bar indicates the process variable (PV). The color of the bar changes with the alarm status of the function block.
An example of PID controller block's PV bar color changes as follows.

Table: Display Color of the Process Variable Bar for controller block

Alarm status	Display color of the process variable bar
No alarm status	Green
Communication error	Gray
In the CAL mode	Cyan
HI, HH, LO, LL	Red
±DV, ±DEL	Yellow

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FV Bar Display – MC-2/MC-2E/MC-3/MC-3E

Normally, the motor control block has a bar display on faceplate to indicate FV. On the Function Block Details Builder, to hide the FV bar display may be defined, thus, the FV bar does not display on the motor control block's faceplate.
In this case, the faceplate of motor control block has the same as switch instrument block.

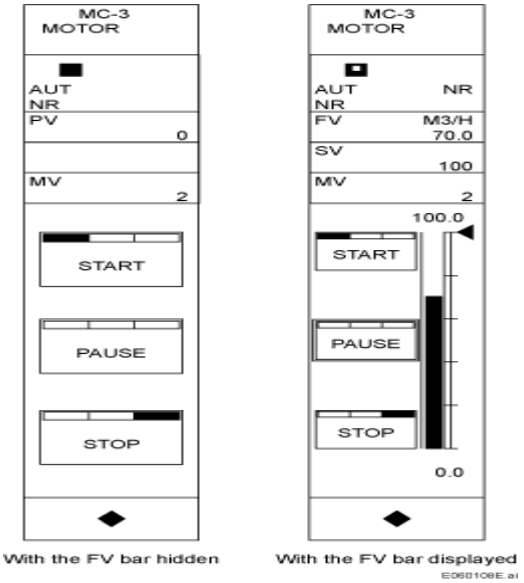

Figure: Example of Three-Position Motor Control Block Faceplate

Limit Value Bars - Instrument Display Area

The instrument faceplate has a manipulated output value limit bar and an operation setpoint value limit bar. The manipulated output value limit bar indicates the high limit (MH) and low limit (ML) of the manipulated output value. The operation setpoint value limit bar indicates the high and low limits (PH and PL) in green and the high-high limit (HH) and the low-low limit (LL) in red.

Setpoint value high limit (PH)	=	60.0
Setpoint value low limit (PL)	=	40.0
Setpoint value high-high limit (HH)	=	80.0
Setpoint value low-low limit (LL)	=	20.0
Scale high limit (SH)	=	100.0
Scale low limit (SL)	=	0.0

Setpoint value high limit (PH)	=	60.0
Setpoint value low limit (PL)	=	40.0
Setpoint value high-high limit (HH)	=	100.0
Setpoint value low-low limit (LL)	=	0.0
Scale high limit (SH)	=	100.0
Scale low limit (SL)	=	0.0

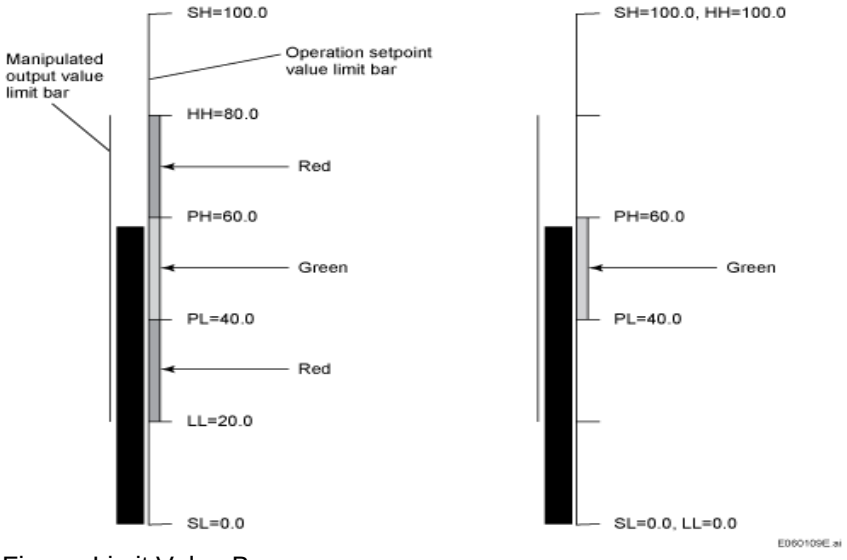

Figure: Limit Value Bars

Buttons - Instrument Display Area
The buttons indicate the status of a device, for example, whether it opens or closes. Each button has:
•Switch
•Lamp
•Operation-guard frame
•Label
The above settings may be defined in the Function Block Details Builder.
The labels for buttons, the switch label position assignment and the button colors to be displayed can also be specified.

Switch Lamp
Switch lamp is part of switch button display.
In order to display the operation status of a switch, the lamp indicates that the answerback signal is received.
The buttons on motor control blocks or switch instrument blocks may be displayed together with lamps.
The buttons on the faceplates of communication I/O points, common switches and annunciators also have lamp indication function.

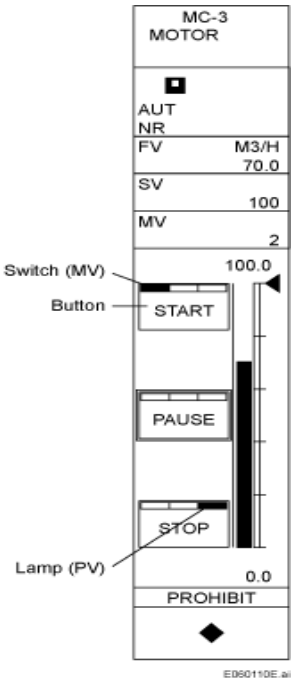

Figure: Switch Button Display with Lamp Indication Function

The answerback status may be indicated by the overall color change of the switch buttons.
The button color may be specified in the button color item definition in the Function Block Details Builder.
The default color may be displayed when the button color is not specified in the builder.

Unit Instrument, SFC Block, Faceplate Block buttons - Instrument Display Area
The following settings may be specified for unit instrument, SFC block and faceplate block buttons.
•Switch property
•Switch display color change
•Operation guard frame
•Confirmation operation
The settings may be specified on the Function Block Details Builder.

Switch Property
The switch properties include type of switch, switch label and switch display color.
•Type of switch
Types of switch include [Button], [Lamp], [Button with lamp] and [Not used].
Lamp:
Displays the input connected destination switch status.
Button:
Displays the operation commands output status. The commands are output to the connected output destination.
Button with lamp:
The above explained functions for both button and lamp are provided.
•Label
The switch label for display may be defined.
•Display color
The switch display color may be defined.

Switch Display Color Change
Designate the color change part on a switch faceplate. Select either switch faceplate background or the switch label color.
Note that the unit instrument, the operation, and the SFC block do not always change their colors.

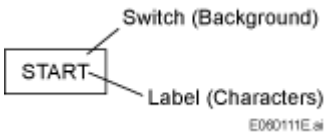

Figure: Switch Display Color Change

Operation Guard Frame
The switch with operation guard frame requires two-step operation to change the switch's status. For the switches needing operators' confirmation, the operation on the switches may pop-out a confirmation dialog box. The operation guard frame is in dotted line or in the solid line may be defined.

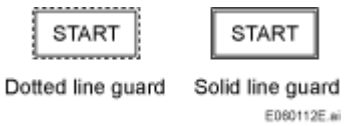

Figure: Operation Guard Frame

Flashing for Confirmation, Color Change for Confirmation and Parts to Change for Confirmation
For two-step operation, define if the buttons start to flash or not when output operation commands to the connected switches. To flash the label character string of the switch or to flash the frame of the label or to flash both character string and label frame may be specified. The color change while flashing may also be specified.
The above specification is only valid for the switches with confirmation function.

Operation Mark
The operation mark is a mark with comment attached to an instrument faceplate. It can temporarily change the operation status (permission/prohibition) of the instrument faceplate.

Setting the Operation Mark
When an operation mark is attached to a function block, a colored label is attached to the instrument faceplate that displays the function block, and the operation permission/prohibition status of the instrument faceplate may be temporarily changed.
To attach or remove an operation mark may be carried out in the operation mark assignment dialog box called up from the Tuning view.

Use the Operation Mark Builder to attach an operation mark to function block.
The setting items include:
•Security level of the operation mark
•Operation mark attach/remove and operation permission/prohibition
•Label of the operation mark
•Color of the operation mark

Data Entry Dialog Call Button on the Instrument Faceplate
The data entry dialog box call button on the instrument faceplate is used to call up the data entry dialog box. Clicking the button may display the data entry dialog box.

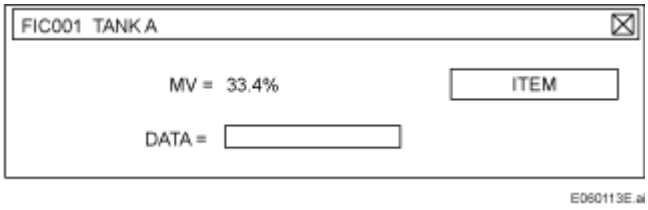

Figure: Data Entry Dialog Box

The data entry dialog box is used to change data values displayed on the instrument faceplate.
The data entry dialog box call button indicates the operation status of the INC/DEC operation.
When pressing INC key-button, the upper part displays in red indicating value increase.
When pressing DEC key-button, the lower part displays in red indicating value decrease.

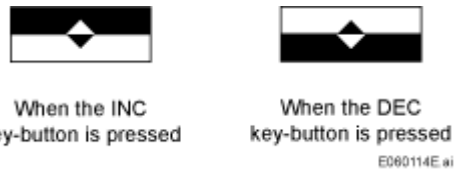

Figure: Operation Status Indications

10. TREND FUNCTION

By using the Trend Recording function, process data such as temperature, pressure and flow rate coming into the Control Station are gathered by the HIS, and the time-series changes in the process data are displayed in a graph (trend graph).

10.1. Flow of the Trend Recording

The Trend Recording consists of:

- Trend Data Acquisition
- Trend Data Display
- Closing Processing

The process data acquired as trend data can be saved into a file using the Save As command, and displayed in a graph as a trend model (reference pattern).
The figure below shows the flow of the Trend Recording:

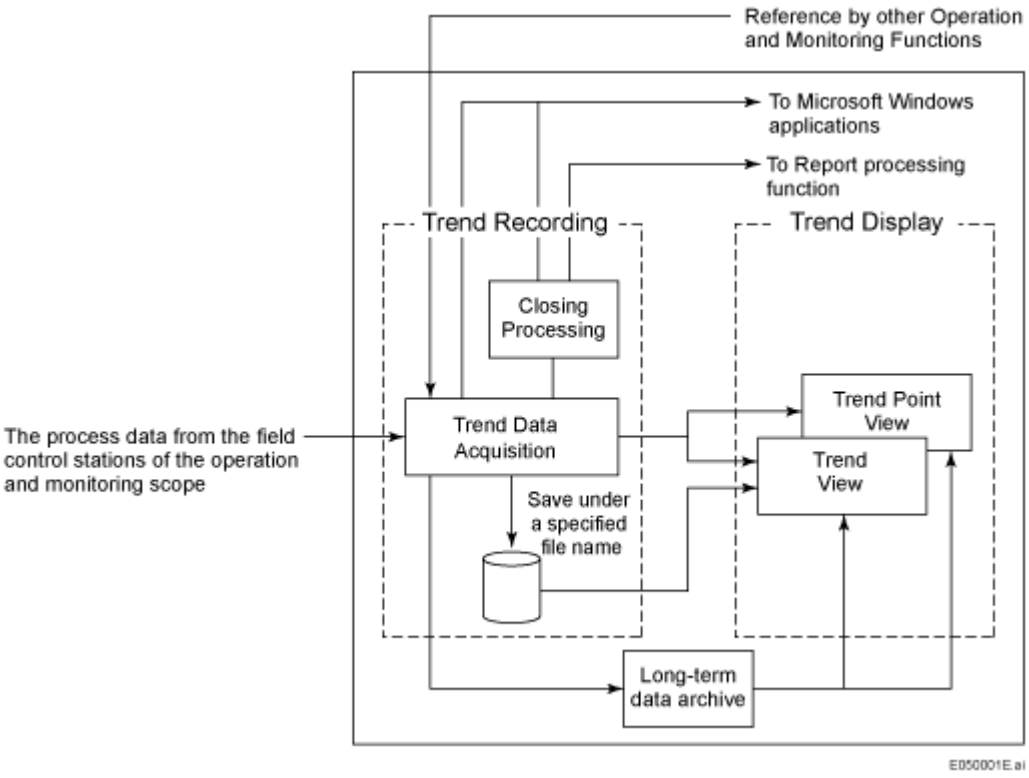

Figure: Flow of the Trend Recording

10.2. Structure of Trend Recording

The Trend Recording has a three-layer structure: Trend Block, Trend Group and Trend Pen. Acquired trend data can be displayed as graphs in the Trend View and the Trend Point View.

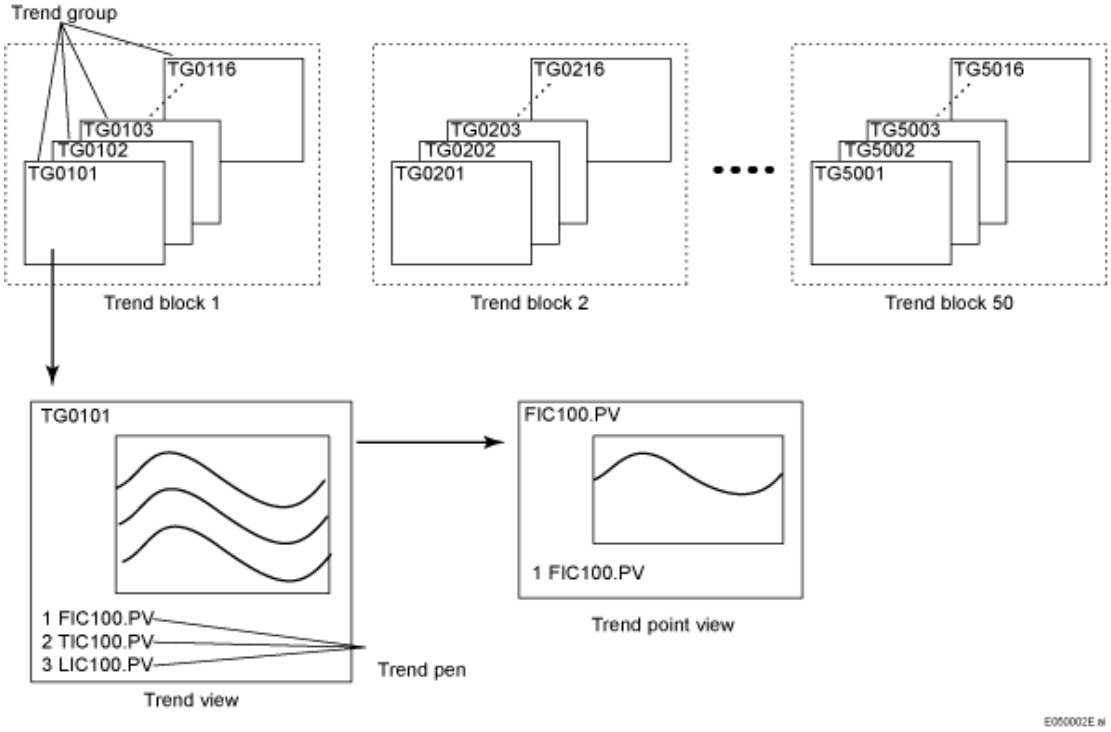

Figure: Structure of Trend Recording

Trend Block
A trend block consists of 16 groups, and each group consists of 8 pens. One HIS has 50 trend blocks, thus the trend data for up to 6400 pens can be recorded.
The type of trend data acquisition and sampling period are specified for each trend block. Of the 50 trend blocks, 26 blocks can be defined as the trend format of “Continuous-Rotary Type”, “Batch-Stop Type” or “Batch-Rotary Type”.
The remaining 24 trend blocks can be defined as the reference of the trend data acquired by other HIS.

Trend View
Eight pens of trend data can be assigned to a Trend View.
One HIS has 128 Trend Views.

Trend Point View
The Trend Point view is called up from the Trend View and displays data for a single trend pen.

10.3. Defining Trend Data Acquisition

To acquire trend data, the following items must be defined:

•Type of Acquisition and Sampling Period

These are defined for each trend block in the Properties sheet of the Trend Acquisition Pen Assignment Builder.

•Assignment of Trend Acquisition Pens

On the Trend Acquisition Pen Assignment Builder, the process data to be acquired should be assigned to trend acquisition pens in trend group units.

10.4. Types of Trend Data Acquisition

The type of trend data acquisition is defined for each trend block in the Properties sheet of the Trend Acquisition Pen Assignment Builder.
Trend data acquisition can be specified for the following 4 types:
•Continuous-Rotary Type
•Batch-Stop Type
•Batch-Rotary Type
•Other-Station-Reference type (Other Station Acquisition Trend)

Continuous-Rotary Type

Using this type, trend data are acquired constantly.
After the HIS is started (turn on the power and log on to Windows), the data acquisition is started automatically and continued until the HIS is shutdown. The acquired data will be retained even if the HIS is shutdown.
After the maximum number of samples is reached, the data acquisition continues by overwriting the oldest data with new data.

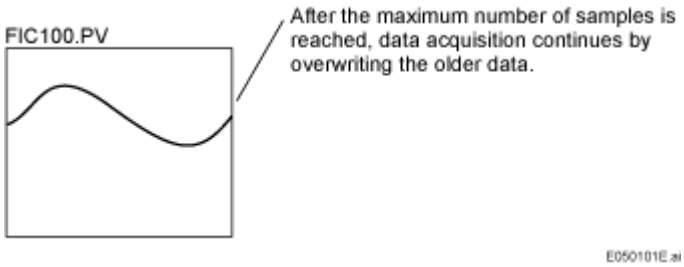

Figure: Continuous-Rotary Type Trend

Batch-Stop Type

Using this type, trend data acquisition starts and stops according to the received commands. If no stop command is received, the data acquisition will stop automatically after acquiring the maximum number of samples.
Start, stop, and resume commands can be issued by the following means:
•Buttons on the toolbar of the Trend View
•Operation on the Graphic View, Function Key or Preset Menu
•Sequence Messages Request function

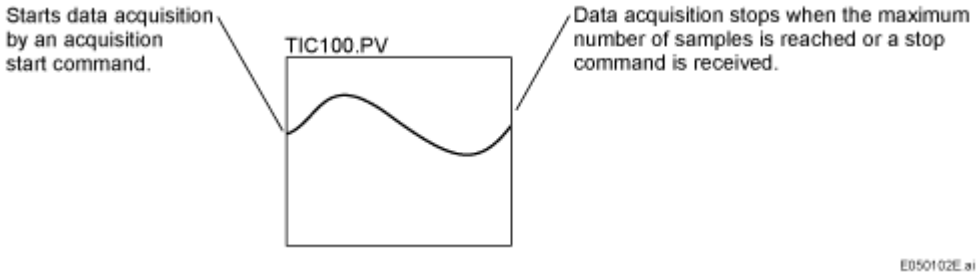

Figure: Batch-Stop Type Trend

Batch-Rotary Type
Using this type, trend data acquisition starts and stops according to the received commands. Once started, the data acquisition continues until a stop command is received. If the maximum number of samples is reached before receiving a stop command, older data are overwritten with new data.
Start, stop, and resume commands can be issued by the following methods:
•Buttons on the toolbar of the Trend View
•Operation on the Graphic View, Function Key or Preset Menu
•Sequence Messages Request function

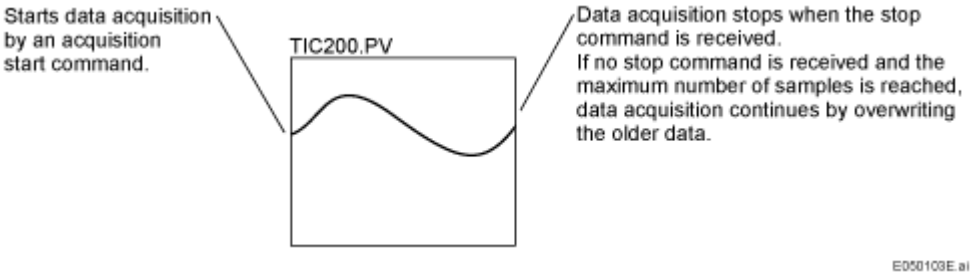

Figure: Batch-Rotary Type Trend

Other-Station-Reference Type (Other Station Acquisition Trend)
Using this type, the trend data acquired by other HIS are referenced in trend block units. On the Trend Acquisition Pen Assignment Builder, the station name of the referenced HIS and the referenced trend block number should be defined.

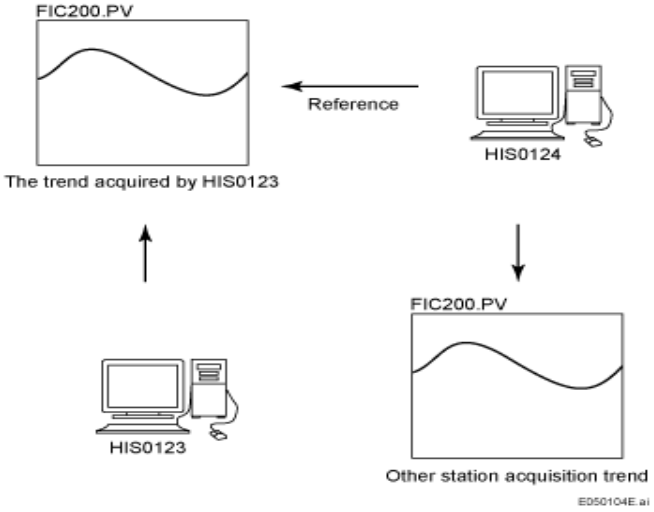

Figure: Other-Station-Reference Type Trend

10.5. Samping Period and Recording Time Span

The sampling period of trend data is defined for each trend block in the Properties sheet of the Trend Acquisition Pen Assignment Builder. The sampling period can be selected from among 1 second, 10 seconds, 1 minute, 2 minutes, 5 minutes, and 10 minutes. The number of trend blocks specified for the sampling periods of 1 minute, 2 minutes, 5 minutes, or 10 minutes is 18 in total. The number of trend blocks specified for the sampling periods of 1 second or 10 seconds is 8 in total.

Note that the sampling periods that allow specification of the closing processing are 1 minute, 2 minutes, 5 minutes and 10 minutes.

The Recording Time is determined by the specified sampling period. The recording span is the time taken to acquire data for the maximum number of samples with the specified sampling period. The maximum number of samples is 2880 (fixed).

Even if the same sampling period has been defined for multiple trend blocks, timings of data sampling for these blocks are shifted by a few seconds so as to decentralize the communication load

The table below shows the relationship between trend sampling periods and recording span:

Sampling period	1 second	10 seconds	1 minute	2 minutes	5 minutes	10 minutes
Recording Span	48 minutes	8 hours	2 days	4 days	10 days	20 days

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Table:Trend Sampling Periods and Recording Time Span

For example, if the sampling period is 1 minute, the time span is as follows.
1 minute x maximum number of samples (2,880) = 2,880 minutes = 48 hours = 2 days
Thus, two days of data are recorded.

For the trend blocks specified for other-station-reference type (other station acquisition trend), there is no need to specify the sampling period or recording span. The sampling period and recording span are as defined in the original station.

10.6. Trend View

The Trend View displays the acquired or saved trend data in graphs to allow monitoring of time-series changes in the process data. Each Trend View displays eight pens. The Trend Point View, which is called up from the Trend View, displays a single pen.

Data Displayed in Trend View
After the trend definition information is downloaded to an HIS for the first time, the data displayed in the Trend View are corresponding to the trend pen assignment defined on the Trend Acquisition Pen Assignment Builder. That is, eight pens are sequentially assigned to the trend groups starting from group 1 of trend block 1.
This initial assignment of display pens can be changed as necessary on each Trend View.

The figure below shows an example of the Trend View.

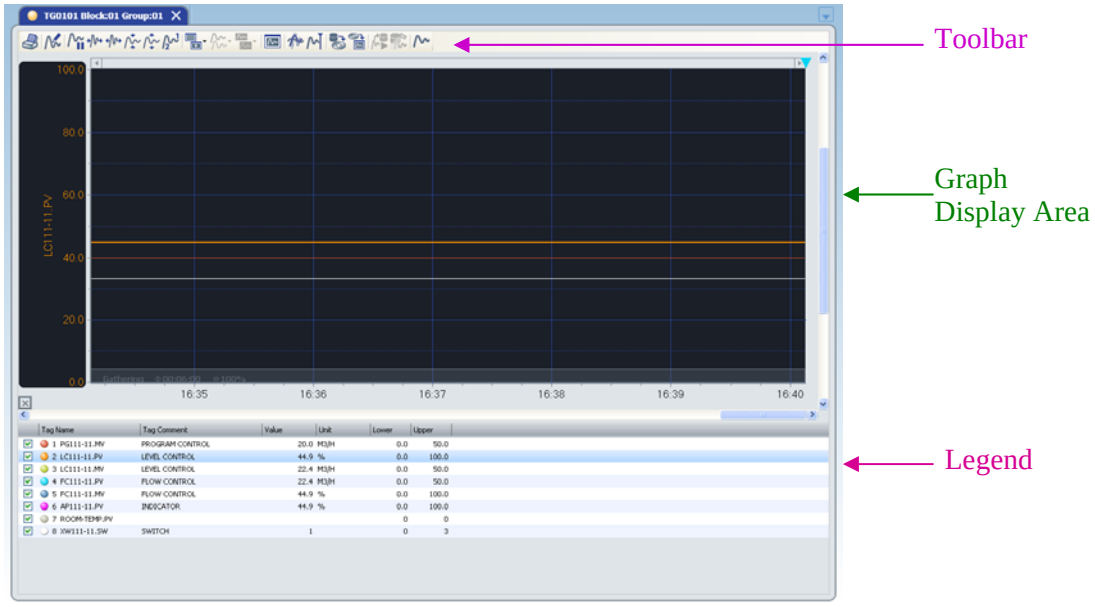


Figure: Trend View

10.7. Display for Different Acquisition Types

Styles of Trend Data Display
Trend data are displayed in three styles according to the type of acquisition and whether the real-time data or saved data are displayed:
•Continuous-type real-time trend
•Batch-type real-time trend
•Historical trend (display of saved data)

Continuous-Type Real-Time Trend
The latest data is always displayed on the right end of the graph and updated at a constant period. The data that have already been displayed are shifted to the left at the constant period.

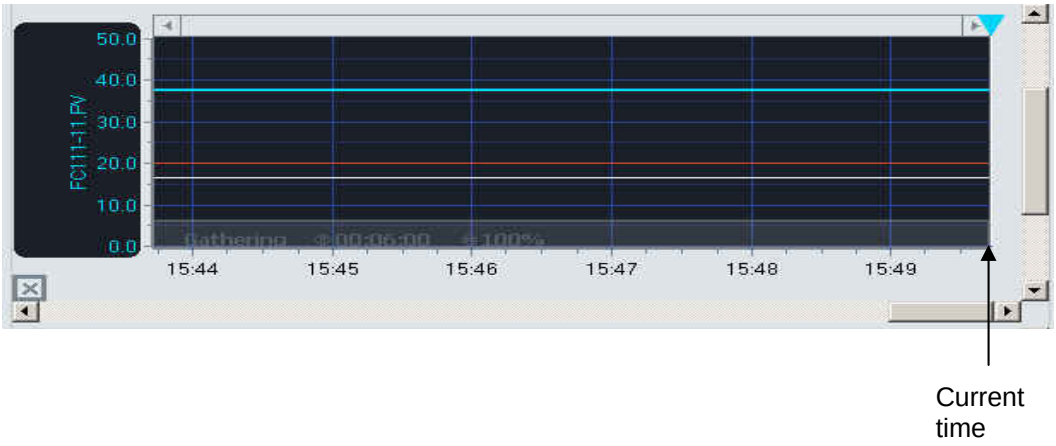


Figure: Continuous-Type Real-Time Trend

Batch-Type Real-Time Trend
Display of the latest data is updated at a constant period, starting from the left end of the graph area. The latest data point moves to the right until it reaches the right end of the graph area, and thereafter the trend graph behaves in the same manner as the continuous-type real-time trend.

The data displayed in this format are those of the trend blocks defined as batch type or other-station-reference type of the batch type.

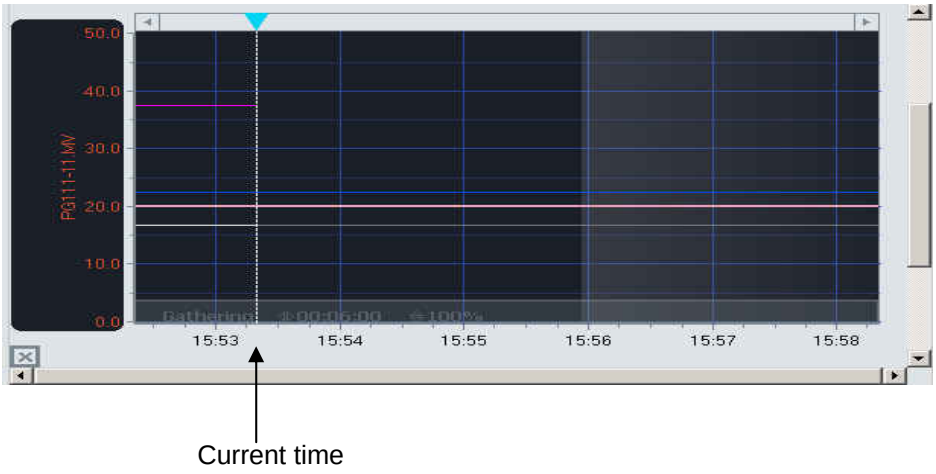
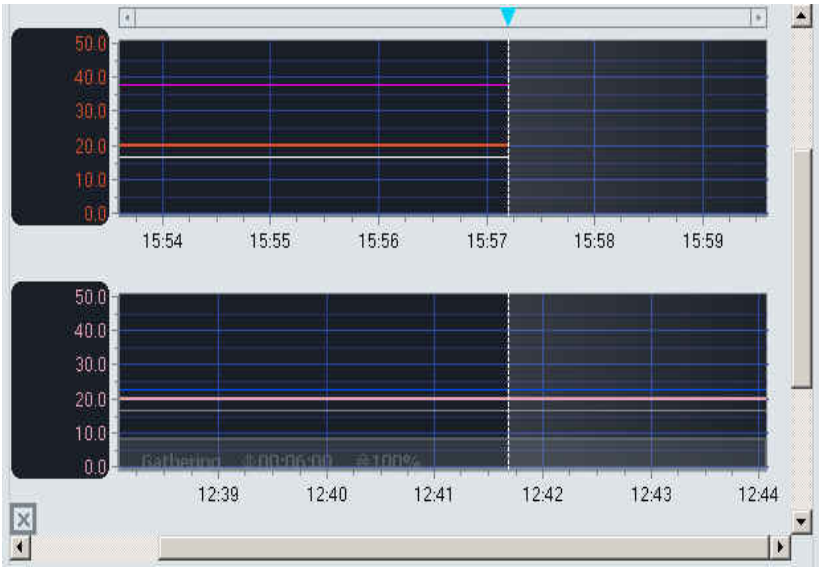


Figure: Batch-Type Real-Time Trend

Superimposed Display of Reference Patterns in Batch-Type Real-Time Trend
In the batch-type real-time trend, trend data can be displayed together with the defined reference patterns. When a reference pattern is not defined, the graph of the batch trend starts from the left end of the graph area and after it reaches the right end, the latest data position is fixed.
The following figures show the operation of the batch-type real-time trend when there is a reference pattern.



The latest data is updated at a constant period in the direction from left to right.

The position of the latestdata stops when it reaches the specified point. Thereafter, the graph shifts to the left at the constant period, and behaves the same as the continuous-type real-time trend. The reference pattern also shifts to the left. (The figure shows the case where 40% is specified. Only the reference pattern is displayed in the 40% area from the right end.)

Figure: Batch-Type Real-Time Trend when Reference Pattern is Defined

Historical Trend [Display of Trend Data]
The past data saved in a file are displayed in this style. Periodical updating of data display is not performed. The saved trend data may be the data saved using the “save as” command or the data saved by the long-term data archive package.
The data saved by the long-term data archive package can be displayed on the Trend View with a desired period specified.
The long-term data saved by other HIS can also be displayed by defining the trend block for which the long-term data of other HIS is specified in the Trend Acquisition Pen Assignment Builder.
The saved data are displayed by the button operation on the Trend View.

10.8. Components of Trend View

The Trend View consists of a toolbar, trend graph display area, and legend area.

Toolbar of the Trend View
The toolbar in the Trend View can be used to perform tasks such as reducing or enlarging the trend graph and saving the trend data.

Figure: Toolbar on Trend View

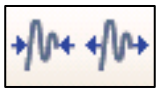
The following are the explanation of the buttons on the Trend View toolbar.

This button outputs the image of the currently displayed Trend View.

This button is used to call up the Trend Pen Assignment dialog box.
In the dialog box, trend pen assignment for the continuous-type trend, change of display attributes, and registration of the batch trend reference pattern are performed.

When this button (left) is pressed down, updating of Trend View display is temporarily suspended and the appearance of the button changes (right). When the button (right) is pressed again, the updating of display restarts from the present time. The trend data acquisition continues even while the updating of display is stopped.

In addition, updating of Trend View display automatically pauses when the trend graph is scrolled along time axis. To restart the display updating, return the scroll bar to the present time position.



When this button is clicked, the trend graph is reduced or enlarged in the direction of the time axis (horizontal direction), with the right end (latest time) of the graph as the reference point. By narrowing the time-axis scale, entire view of long-term trend data may be displayed in the trend graph. By widening the time-axis scale, fine changes of the trend graph may be monitored.
Each time the button is clicked, the time-axis scale changes to 8, 4, 2, 1, 1/2, and 1/4 times of the standard scale.

The display time span is shown in the left bottom of the trend graph.

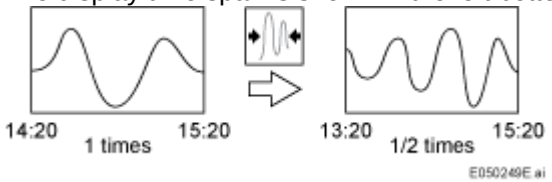
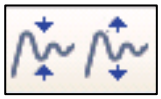


Figure: Trend Graph with Narrowed Time-Axis Scale



These buttons reduce or enlarge the data-axis scale of the trend graph.
In the standard scale, the trend graph is displayed on a scale from 0 % to 100 %. By changing the data-axis scale, the trend graph display may be enlarged or reduce with the center (50 %) as the reference point. Each time the button is clicked, the scale changes to 1/2, 1, 2, 5 and 10 times.

The data-axis scale is shown in the left bottom of the trend graph.

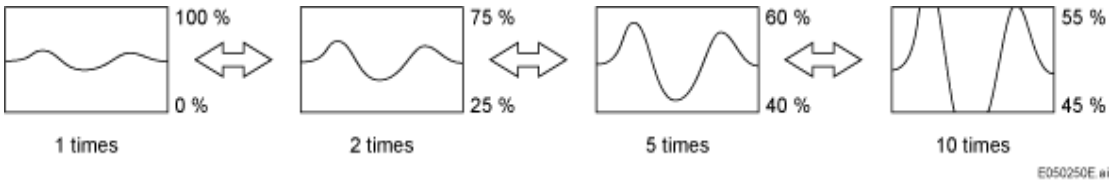


Figure: Changing Data-Axis Scale of the Trend Graph

When the data-axis scale is enlarged to a size larger than the standard, a scroll bar is displayed so the trend graph may be scrolled up and down.

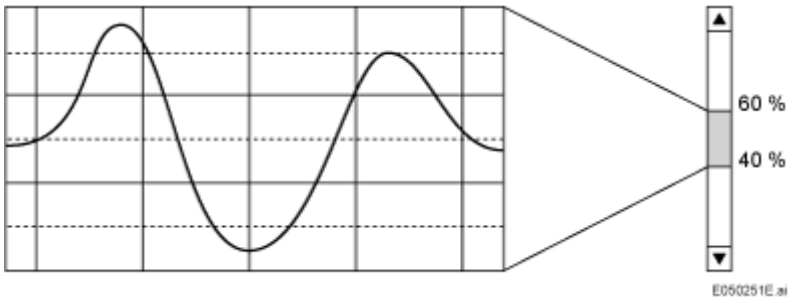


Figure: Data-Axis Enlarged Display and Scroll Bar
Note that this button enlarges 8 pens as a group. To have an enlarged view of a specific pen, open the Trend Pen Assignment dialog box and change the high and low limit values.

When this button is pressed down, the pen number is displayed on the trend graph.
To hide the pen number, release the button to normal.

This button switches display modes. The menu is displayed when this button is clicked, and standard mode, various tile modes or zoom mode can be selected.

When trend data and reference patterns are superimposed in the graph, this button selects the target of scrolling. From the menu displayed by clicking this button, trend data only, reference patterns only, or both trend data and reference patterns can be selected to be scrolled.

When the trend data to which reference patterns are assigned are displayed, this button selects whether to show or hide the trend data and reference patterns.
The data to be shown is chosen from the menu displayed by clicking this button.
Trend data only, reference patterns only, or superimposed display of trend data and reference patterns can be selected.
The trend data acquisition continues even while the trend data are hidden.

This button calls up the trend point view of the selected pen.

When the trend graph scales have been changed, clicking on this button returns the trend graph display to the initial state.

This button moves the main index mark to its initial position (position of the latest data).

This button saves the trend data displayed in the Trend View in a file.

This button is used to display the trend data saved in a file.
The trend data of the specified file are displayed in the Trend View where this button was clicked, hiding the trend graph originally displayed in the Trend View.

This button pauses or resumes trend data acquisition.
This button can be used in the case of batch trend acquisition.

This button starts batch trend acquisition.
When the batch trend acquisition is started, the trend data displayed before is lost.

This button displays the data saved in a Long-Term Data Archive File.
From the menu displayed by clicking this button, select [Specify file] to open the dialog box to select an archived file. After selecting a file, clicking this button and selecting [Specify time] from the displayed menu can specify the time of the first data to be read and the number of samples for display.

This button is displayed when the Long-Term Data Archive package is installed and a long-term data archive period is set.

Clicking this button displays the data of the previously archived file with respect to the currently displayed archive file. If this button is clicked while the Trend View is displaying real-time data, the data of the most recently archived file are displayed.
This button is displayed when the Long-Term Data Archive package is installed and a long-term data archive period is set.

Clicking this button displays the data of the next archived file with respect to the currently displayed archive file. If the next file does not exist, the Trend View returns to real-time data display.
This button is displayed when the Long-Term Data Archive package is installed and a long-term data archive period is set.

This button calls up the Trend View again.
When the Trend View is showing trend data saved in a file, clicking this button resumes real-time data display.

10.9. Trend Graph Display Area of the Trend View

In the trend graph display area of the Trend View, the acquired trend data are displayed
The trend graphs are displayed in distinct colors for different trend pens. The correspondence of each pen color and trend data is shown in the legend area.

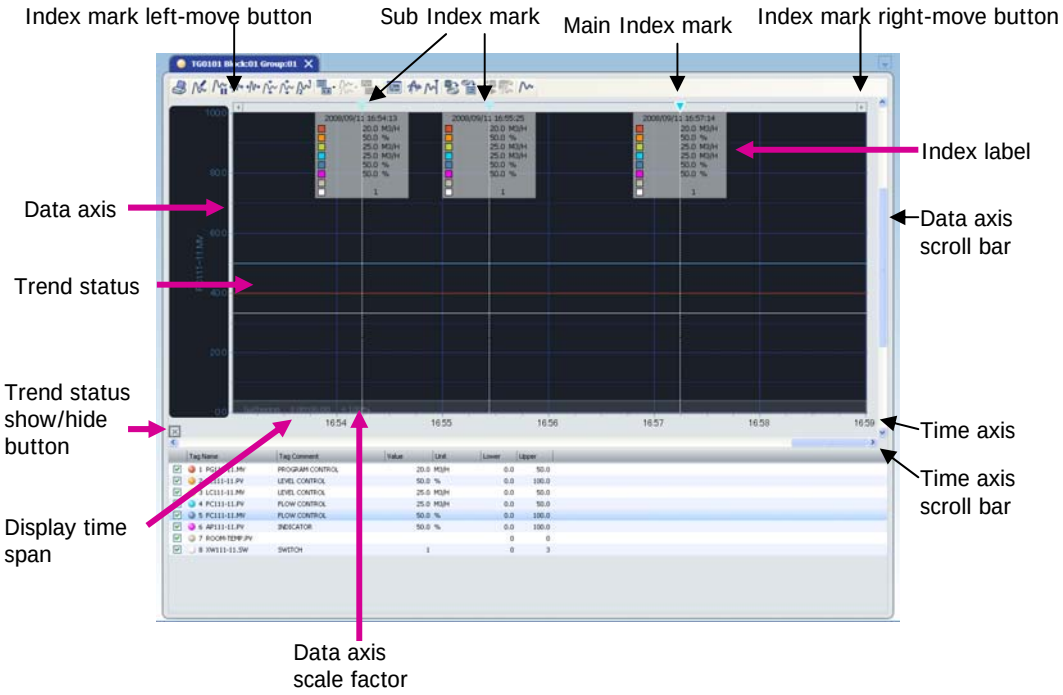


Figure: Trend Graph Display Area of the Trend View

Main Index Mark

The main index mark is always displayed, and the data values at the index mark position are displayed in the legend area. The time of the index mark position is displayed on the index label, which is displayed by right-clicking the index mark.
When the index mark is moved, the index line moves together.
Pressing the index initialization button on the toolbar returns the main index mark to the present time position (latest data position).

Sub-Index Mark

Up to two sub-index marks can be displayed as needed.
To display a sub-index mark, double-click the position to add a sub-index mark in the index mark display area (horizontal zone above the graph).
To delete a sub-index mark, select the index mark and select [Delete the selected index] from the right-click menu.

Index Label

An index label is displayed on the line of a sub-index mark. The date and time, display pen marks, and the data values at the index position are displayed. An index label is translucent, so the graph does not become hard to see.
An index label can be shown or hidden by the right-click menu operation of the relevant index mark. It can move on the index line up and down when dragged with the mouse.

Index Mark Move Buttons

These buttons move a selected index mark to the left and right. An index mark can be selected/deselected by clicking the index mark. Index marks can also be moved by dragging with the mouse, however, using these buttons allows fine adjustment.

Trend Status Indication
The trend status, time-axis display span, and data-axis scaling factor are displayed in the left bottom of the graph area. While the data saved in a long-term data archive file are displayed, the start time and the end time of the file are displayed instead of the trend status.
Trend status indication can be shown or hide by the button in the left-bottom corner of the graph area.

Zoom Mode
In zoom mode, the area selected by dragging with the mouse in the Trend Graph can be enlarged.
To enter zoom mode, click the display mode switch button on the toolbar and select [Zoom Mode] from the displayed menu.

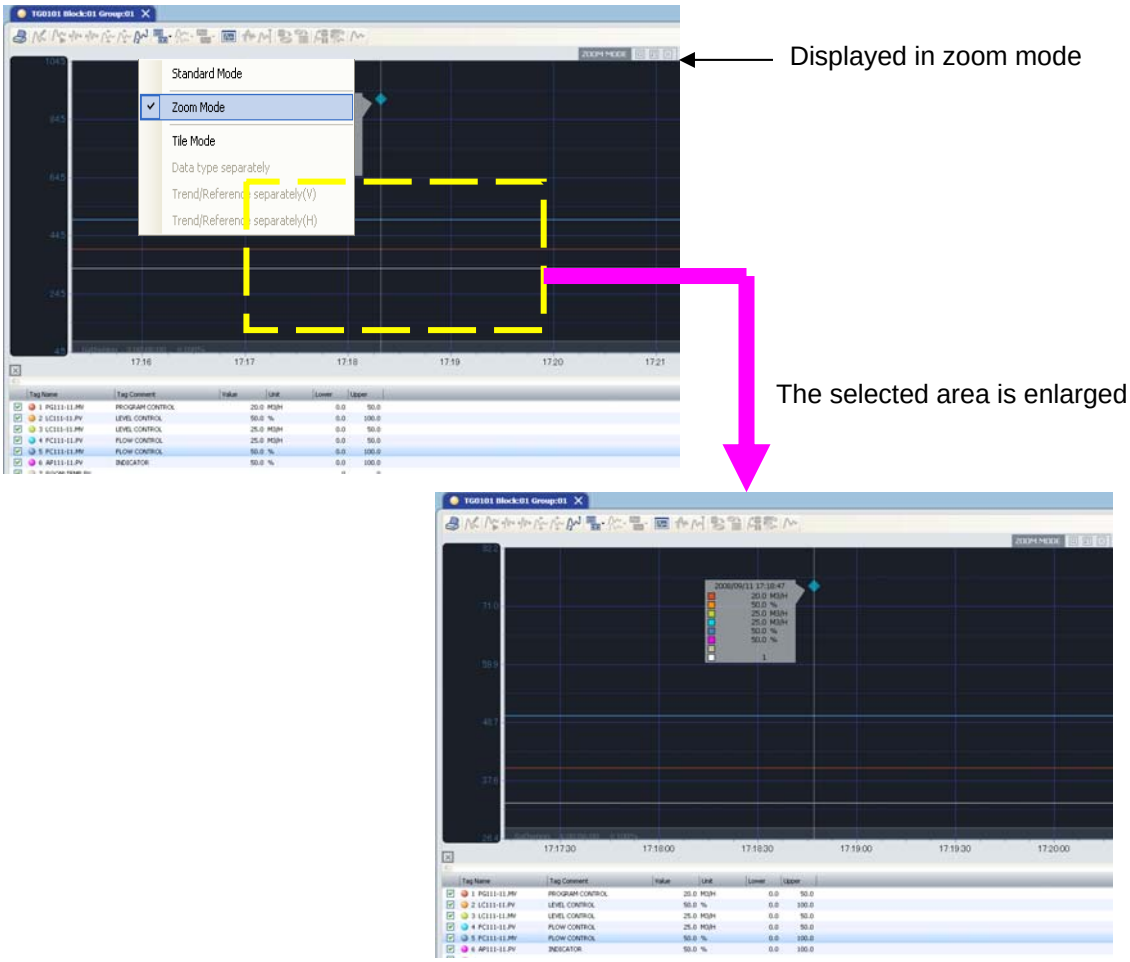


Figure: Zoom Mode

When an area is selected by dragging with the mouse on the enlarged graph again, it is enlarged further. By selecting the area repeatedly, the graph is enlarged in steps.
In zoom mode, the following buttons are displayed in the upper right of the graph.

When this button is clicked after performing the enlarging operation once or several times, the graph is returned to the previous size. This operation is valid only once.

Click this button to reset the graph to the initial state.

Click this button to exit zoom mode.
In zoom mode, the periodical updating of the trend graph display stops temporarily and scrolling operation is disabled.

Right-Click Menu
The following operation can be done from the menu displayed by right-clicking on the graph.
Table : Right-Click Menu of Graph Display Area

Menu Item		Description
Window	Toolbar	Show/hide the toolbar
	Legend	Select the legend format and show/hide the legend area
	Index	Show/hide index marks
Grid		Show/hide grids
Simple display		Select/deselect simple display
Clipboard copy	Data	Copy the currently displayed data to the clipboard
	Image	Copy the currently displayed image to the clipboard

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Highlight Selected Pen
When highlighting of selected pens is specified in the Trend tab sheet of the HIS Setup Window, the graph of the selected pen is displayed in heavy line.
To select a pen, click the target pen in the legend area. Multiple pens can be selected by the basic operation of Windows.

Background Color of Trend Graph
The background color of the trend graph is selectable from three colors: black, white, and gray. Open the Trend tab sheet of the HIS Setup Window, and select a color from the pull-down menu of [Color Theme].

Color of Data Axis Labels
In the left side of the data axis, the tag name and scale markings for the selected pen are displayed. Their display color can be selected as either the color of the pen or the color of the time axis.
Open the trend tab sheet of the HIS Setup Window, and select from the pull-down menu of “Data Axis Color.”

Legend Area of Trend View
In the legend area, information on each trend pen displayed in the graph is displayed. There are the following three types of legend display, and, in any case, correspondence between the color and the trend data of the pen on the graph is shown.
•Grid type
•Floating type
•Bar type
When the Trend View is called, legends are displayed in the grid-type format. By switching to the floating type or bar type, legends are displayed in simplified format to make the graph easy to see.
The display formats can be switched with the right-click menu on the graph. Whether to show or hide the legends can be selected with the right-click menu as well.

Grid Type
Grid-type legends are shown below the trend graph and display the detailed information of individual pens. The instantaneous values of the trend data at the main index mark position are displayed in the data value fields.

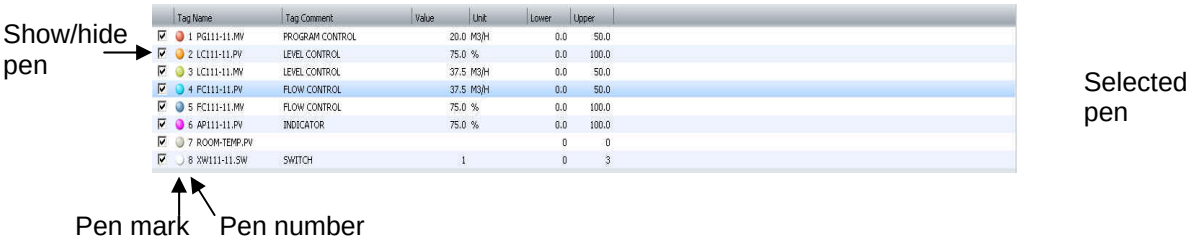


Figure: Legend Display (Grid Type)

When the reference pattern is defined, information on the trend data is displayed in the upper part and information on the reference pattern is displayed in the lower part.

Floating Type
In the floating format, the display size and the display position can be changed by mouse operation.

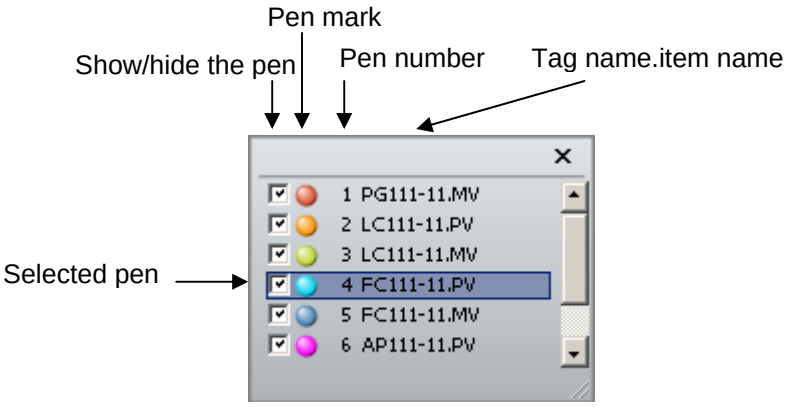


Figure: Legend Display (Floating Type)

Bar Type
In the bar format, legends display is reduced to a single line below the graph.
As for hidden items, the entire strings of the tag name and item name and tag comment can be read in the popup display by moving the mouse cursor on the legend.

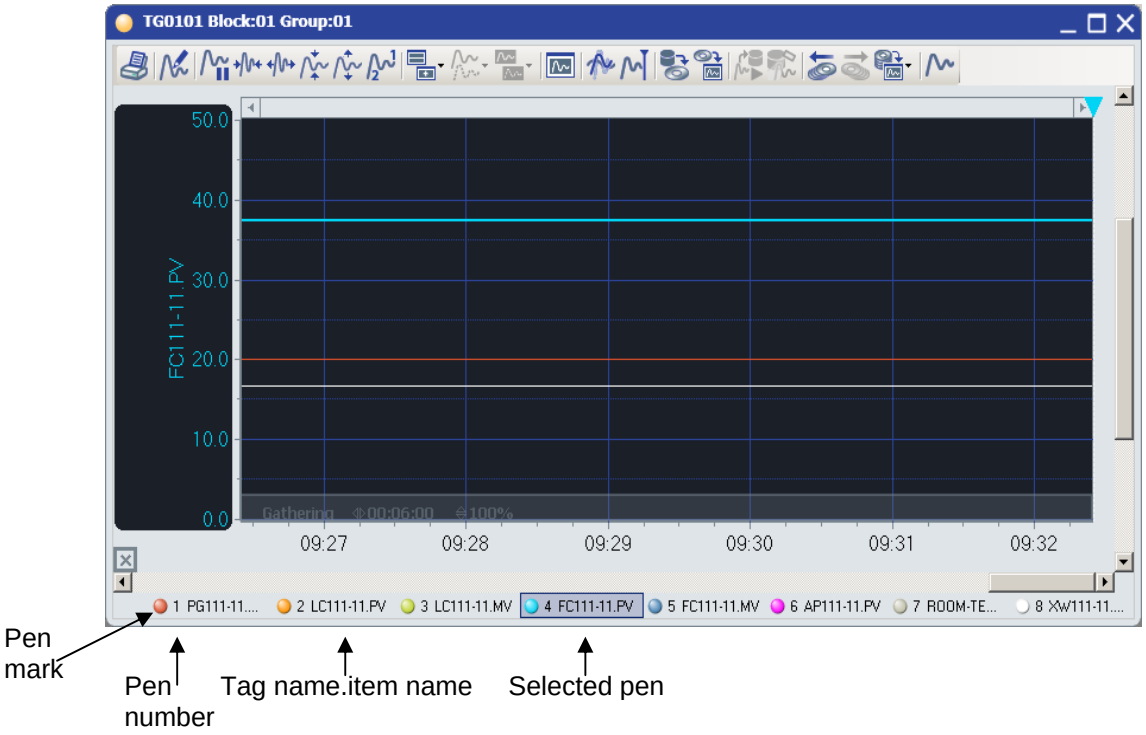


Figure: Legend Display (Bar Type)

Operation in Legend Area
In all types of legend display, the following operation can be done.
•Clicking a pen selects the pen.
•Double-clicking a pen calls up the faceplate.
•Check box operation selects show/hide of the pen.
•Deleting the pen

Show/Hide Display Elements
The graph display area can be widened and easily seen by hiding respective display elements.
Legends can be displayed in a simplified format in addition to being hidden.
Whether to hide or show a display element is selected by right-click menu operation, and when the Trend View is called up again, it appears in the previous display state.
•Toolbar, legends, index mark, grid line in graph: Right-click on the graph
•Index label: Right-click the corresponding index mark

When [Simple display] is chosen from the right-click menu on the graph, the axis labels are omitted and only the graph can be displayed fully in the graph display area.

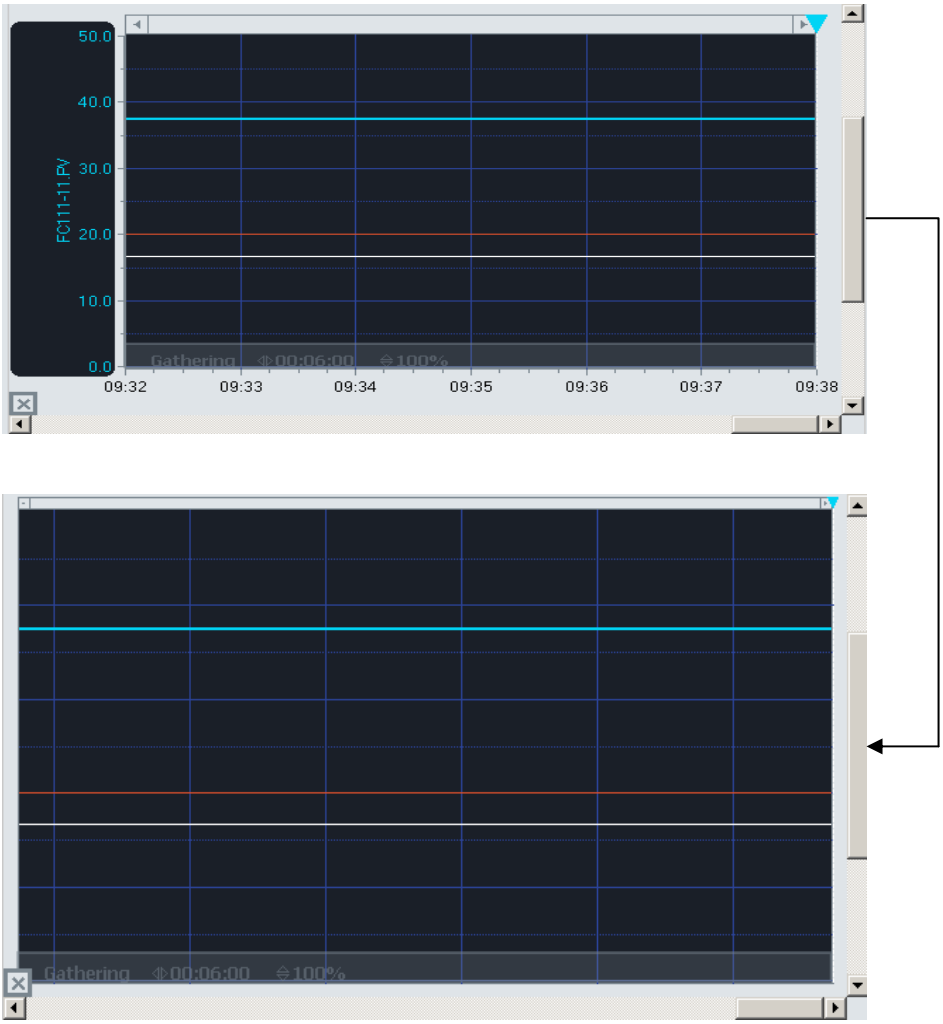


Figure: Simplified Display of Graph

10.10. Trend Point View

The Trend Point View displays one of the 8 pens of trend data assigned to a Trend View. The Trend Point View is automatically created when a trend pen is assigned to a Trend View and can be called up only from the Trend View.
When the batch-type trend data to which a reference pattern is assigned is displayed, the reference pattern is displayed too.

The figure below shows an example of a Trend Point View.

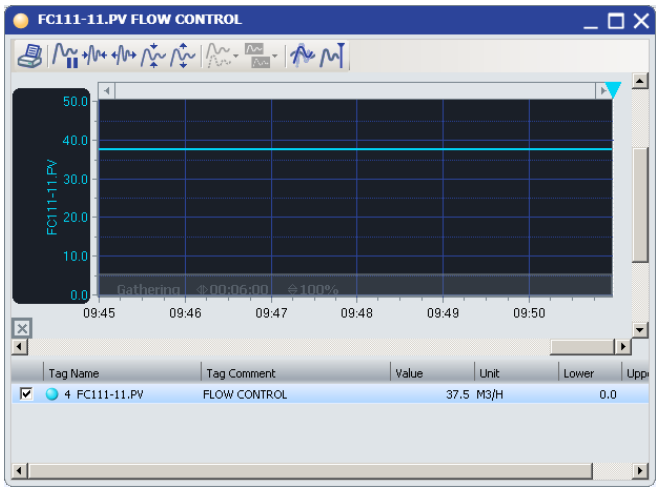


Figure: Trend Point View

Calling up a Trend Point View

The Trend Point View can be called up only from the Trend View.
To call up a Trend Point View, select a trend pen from the legend area of the Trend View, and click the Trend Point View call-up button on the toolbar.

2. Click the Trend Point View call-up button.

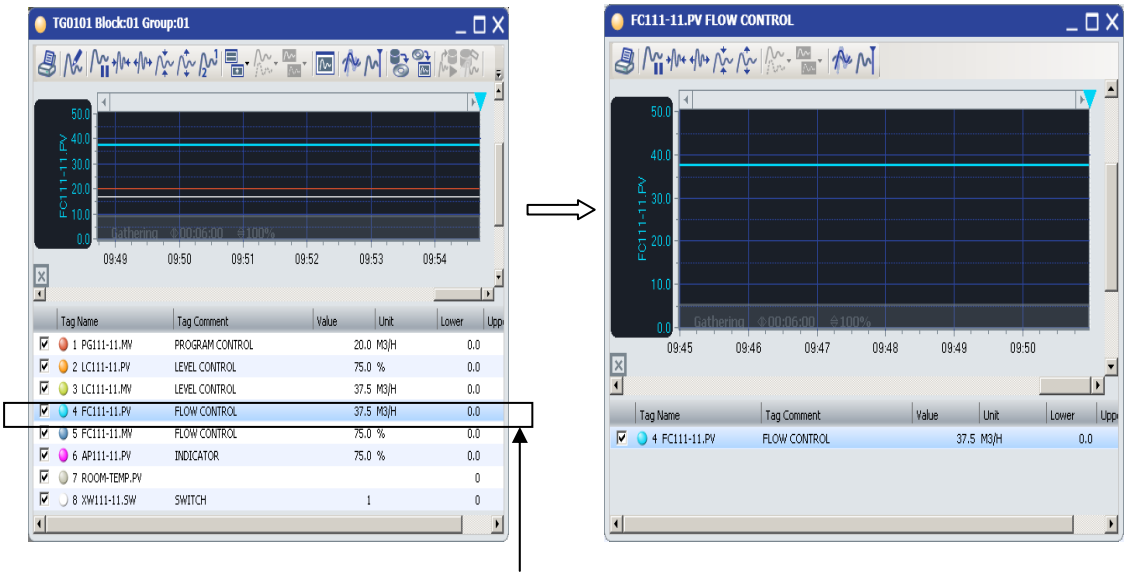


Figure: Calling up Trend Point View

10.11. Clipboard Copy

The image and the numeric data of the graph displayed in the Trend View can be easily used in other applications by capturing it to the clipboard and doing the paste operation of Windows.
To do Clipboard Copy, select [Clipboard Copy] from the right-click menu on the graph of the Trend View, and select [Image] or [Data].

Clipboard Copy of Trend View Image

The displayed image of the Trend View is copied.
Only the displayed contents without the window frame are copied.

Clipboard Copy of Trend Data

The trend data values of the scope displayed in the Trend View are copied.
The data copied onto the clipboard can be used by incorporating it to the spreadsheet software etc. The following information is copied:
•For each trend pen: the number of copied data points, tag name, data item, tag comment, low limit value, high limit value, number of decimal point digits, and engineering unit

•For each of the copied data points: date and time, data value, and data status

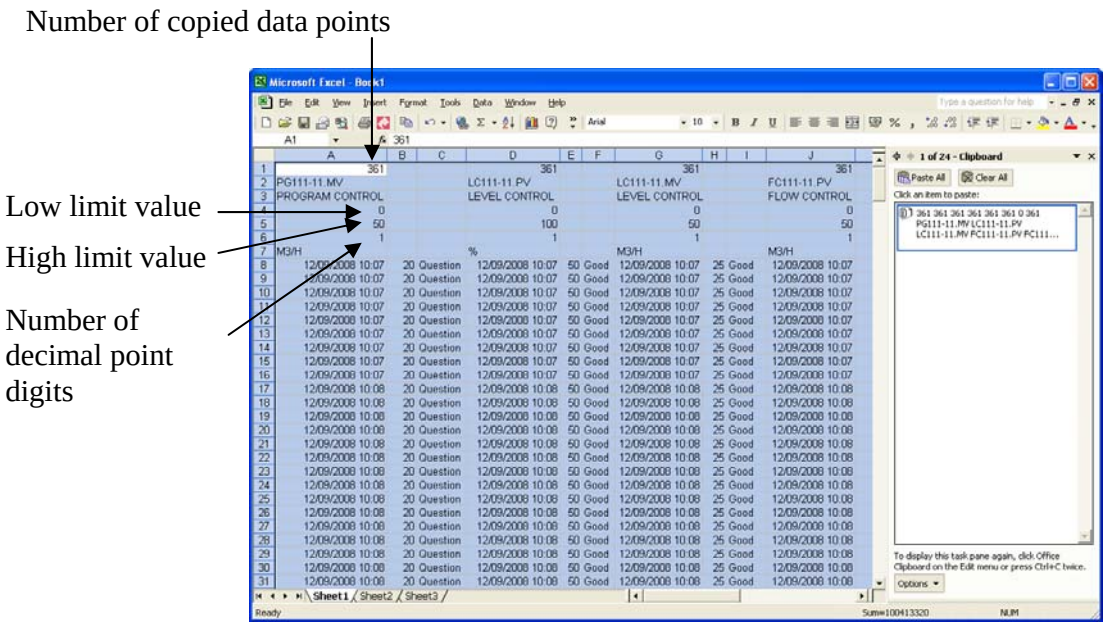


Figure: Example of Data Copied to Clipboard

10.12. Changing Display Pen Assignment

In the Trend View, the displayed trend pen data may be changed from one to the other. The display pen assignment can be changed either in the Pen Assignment dialog box or by the drag & drop operation from the trend acquisition overview on the Browser Bar.
In both cases, acquisition pens of different trend blocks can be assigned; however, changing of assignment is only allowed for the pens of the blocks defined for continuous-type acquisition. Also note that when assigning the pens of a block defined as other-station-reference type, it must be defined as continuous type in the referenced HIS.
Security can be set for the Trend View so that the trend data displayed cannot be changed.

Changing Display Pens from Pen Assignment Dialog Box

Clicking the following button on the toolbar of the Trend View opens the Pen Assignment dialog box.

The figure below shows an example of the Pen Assignment dialog box (Pen Assignment tab).

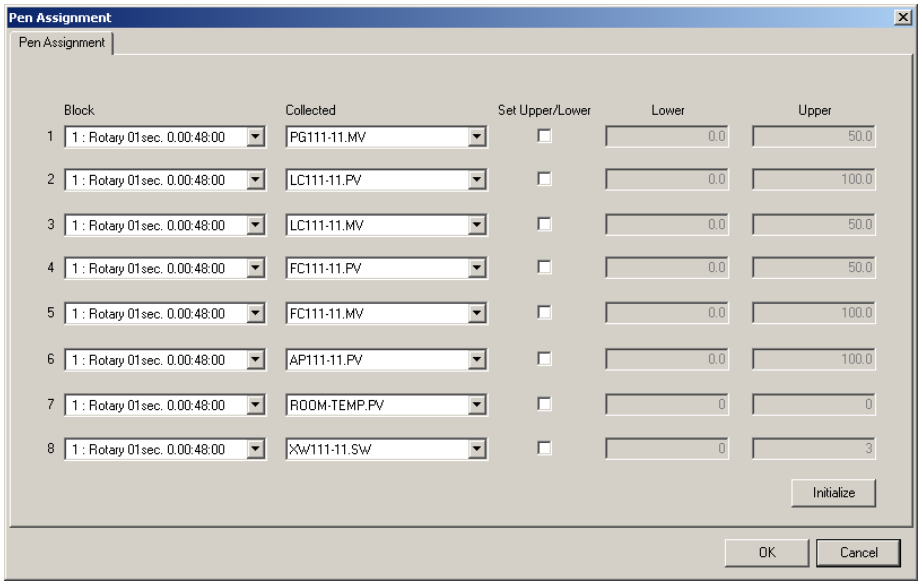


Figure: Pen Assignment Dialog Box (Pen Assignment Tab Sheet)

Block Number
A trend block number may be selected for each pen.
In the pull down menu, the trend block number is displayed along with the acquisition type, sampling period and recording time defined via System View are displayed.

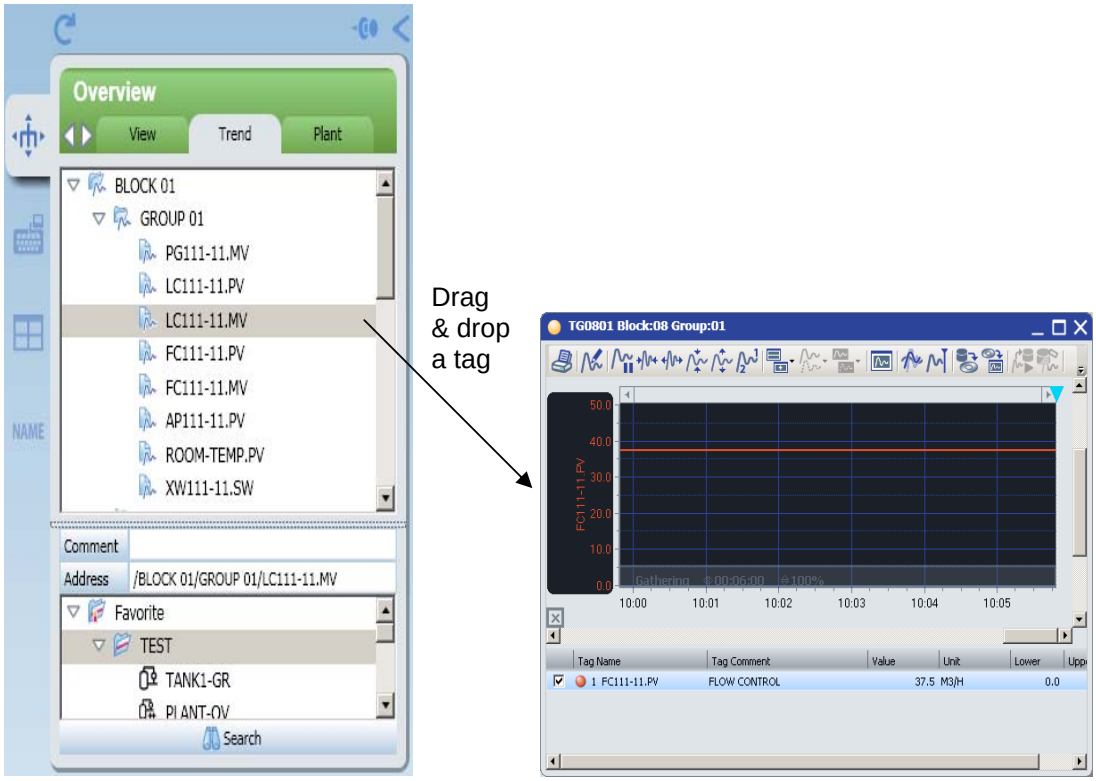
Data to be Collected
The trend data assigned to each trend pen can be selected from the pull down menu.
In the pull-down menu, the process data of the selected block defined on the Trend Acquisition Pen Assignment Builder are displayed.

Setting of Upper/Lower Limit Values
Select the checkbox when specifying the high and low limit values for the data axis displayed in the trend graph.
If not selected, the trend graph is displayed using the high and low limit values set on the Trend Acquisition Pen Assignment Builder.

Lower/Upper Limit Values
Specify the low limit and high limit values of the data axis displayed in the trend graph.

Initialize Button
The trend pen assignment is reset to the assignment defined on the Trend Acquisition Pen Assignment Builder.

Changing Display Pens from Browser Bar
Drag the tag that has been defined for trend acquisition displayed in the trend acquisition overview on the Browser Bar and drop it in the graph of the Trend View.



Trend acquisition overview of Browser Bar (The trend hierarchy defined with the builder is displayed)

Trend View

Figure ; Assigning Trend Pens from Browser Bar

Adding a Pen

In the procedure for changing from the Browser Bar, the data can be assigned to only the pen number to which the data is not assigned. It is assigned to the pen number in ascending order.

When all eight pens have already been assigned, the pen adding operation results in an error. Therefore, delete any pens first and do the adding operation.

Deleting Display Pens

The display pen can be deleted on the Trend View by the following operation.

Select the pen to be deleted from the legend area, and choose [Delete the selected pen] from the right-click menu on the header of the legend area. To delete all eight pens, choose [Delete all] from the right-click menu.

10.13. Saving and Reading Trend Data to/from a File

The acquired trend data can be saved in a file. The saved data can be displayed in the graph of a Trend View again.

There are following two types of methods for saving trend data.

•Saving trend data under a specified file name

•Saving by Long-Term Data Archive Package

The file format of saved trend data of CENTUM VP is different from that of CS 3000/CS 1000.

The data saved on CENTUM VP cannot be displayed on CS3000/CS 1000 though the data saved on CS 3000/CS 1000 can be displayed on CENTUM VP.
•While the Trend View is displaying saved trend data, the Trend Point View cannot be called up.

Saving and Reading Under a Specified File Name
The data displayed in the Trend View (in units of eight pens) can be saved under a specified file name.
The saved data can be displayed in the graph of the Trend View again, and can also be used as reference patterns of the batch-type trend.

Saving Trend Data
Use the toolbar button shown below to save trend data.

Clicking this button calls up the Save As dialog box and the Comment Entry dialog box in sequence.

Enter a file name in the Save As dialog box.

Displaying Saved Data
To display the trend data saved in a file, click the following button on the toolbar of the Trend View and specify the file name.

After saved data are displayed in the Trend View, clicking the following button will return the display to the real-time trend display.

10.14. Displaying Archived Long-Term Trend Data

When the Long-Term Data Archive package is installed to the system, the data saved in long-term data archive files can be displayed in the Trend View.

Displaying Data Saved in a Long-Term Data Archive File
To display data saved in a long-term data archive file on the Trend View, use the following toolbar button.

Click this button, and from the menu displayed, select [Specify File] to open the dialog box to specify a long-term data archive file. Select the target file and click the [Open] button. The data are read from the specified file and displayed in the graph of the Trend View.
Further, clicking this button and selecting [Specify Time] from the displayed menu can specify the time of the first data to be read and the number of display samples.

•Name of long-term data archive file
The file name consists of block number, date, and time.
Bnn - yyyy - mmdd - hh00.ltd
Bnn: Block number
yyyy: Year
mmdd: Month and day
hh00: Start time (Always starts on the hour.)
ltd: File extension

•File comment
Displays the comment set in the long-term data archive dialog box. If not changed from the default comment, the time period of the saved data is shown.
Moreover, when the data of a Long-Term Data Archive File is displayed in the Trend View, clicking the buttons below displays the data of the file before or after the currently displayed file.


Displays the data in the previous long-term data archive file.


Displays the data in the next long-term data archive file.
If the next file does not exist, the display returns to the real-time trend display.

Time Axis Span for Display
When the trend data in a long-term data archive file are displayed in the Trend View, the time axis span depends on the sampling period of the saved trend data.

Displayed Data when Pen Assignment has been changed on the Trend View
Trend data are saved in a long-term data archive file for each trend block.
When operation to display data in a long-term data archive file is done, the data of the pens shown in the Trend View at that time are selectively read from the file and displayed.

10.15. Using Reference Patterns

What is Reference Pattern?
A reference pattern is a trend pattern model used in trend graph. It can be displayed on a graph together with trend data acquired in the batch-type format.
Security setting can be made so that the trend reference pattern assignment cannot be changed.

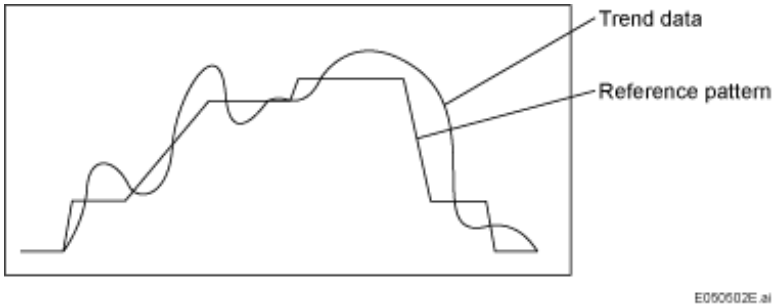


Figure: Acquired Batch-Type Trend Data and Reference Pattern

Creating Reference Patterns
Acquired trend data are used as reference patterns.
To use the acquired data as a reference pattern, save the acquired trend data under a specified file name, and assign the data in the file to a batch-type trend acquisition pen.

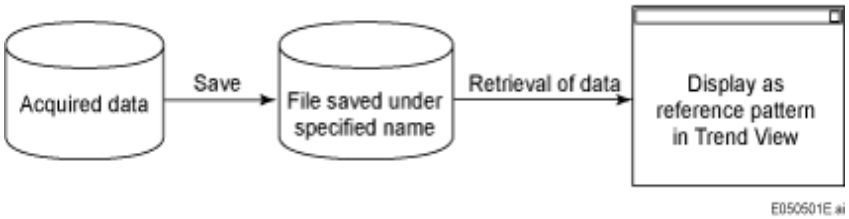
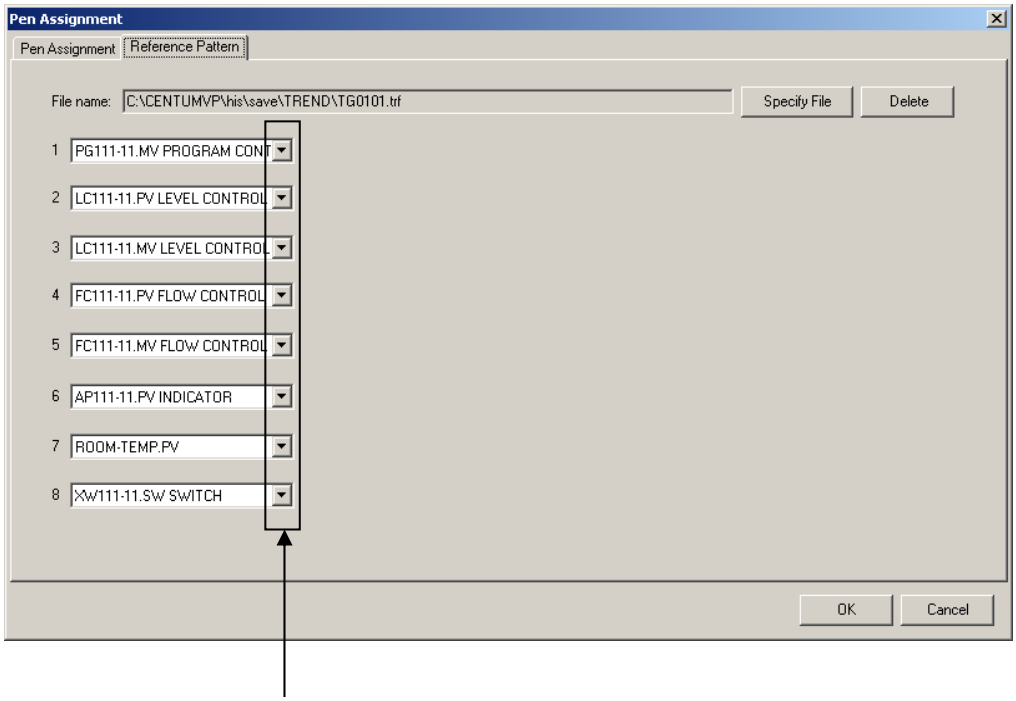


Figure: Creating Reference Patterns

Assignment of Reference Patterns
To display the created reference pattern, it should be assigned to each pen of the trend data acquired in the batch-type format. This assignment is done on the reference pattern tab sheet of the Pen Assignment dialog box.

Clicking this button of the Trend View toolbar calls up the Pen Assignment dialog box.
In the Reference Pattern tab sheet, specify the file containing the reference patterns and assign one of the eight pens of data patterns in that file to each trend pen currently displayed in the Trend View. Up to 8 trend reference patterns can be displayed in the Trend View.

The following figure is an example of the Reference Pattern tab sheet of the Pen Assignment dialog box.



From the pull-down menu, one of 8 pens of data patterns in the specified file can be selected.

Figure: Pen Assignment Dialog Box (Reference Pattern)

File Name
The name of the file containing the reference pattern specified with the [Specify File] button is displayed with the pathname.

Specify File Button
Clicking this button calls up the dialog box to choose the file containing the trend reference patterns. The file names of the trend data saved in the past are listed in this dialog box.

Delete Button
Clicking this button deletes the reference pattern file name and cancels the current file specification.

Reference Pattern Data
The data to display as a reference pattern can be selected from the pull-down menu. The pull-down menu shows the tag names, data item names, and pen comments etc. of the reference pattern data saved in the reference pattern file.

Displaying Reference Patterns
The reference patterns assigned in the Pen Assignment dialog box can be displayed in the Trend View. In the Legend area, information on the trend data is displayed in the upper part and the information on the reference pattern is displayed in the lower part. The following buttons on the Trend View's toolbar are used to select whether to show or hide the reference patterns and whether the trend data, reference patterns, or both are scrolled in the graph. The operation of these buttons in the Trend Point View is the same.

This button selects whether to show or hide the trend data and reference patterns.
The data to be shown is chosen from the menu displayed by clicking this button.
Trend data only, reference patterns only, or superimposed display of trend data and reference patterns can be selected.

When trend data and reference patterns are superimposed in the graph, this button selects the target of scrolling. From the menu displayed by clicking this button, trend data only, reference patterns only, or both trend data and reference patterns can be selected to be scrolled.
The trend data with reference patterns can be displayed in various Tile Trend modes.

Tile Trend Display
In addition to normal trend graph display, trend graphs can be tiled.
The display mode is switched by the display mode switch button on the toolbar.

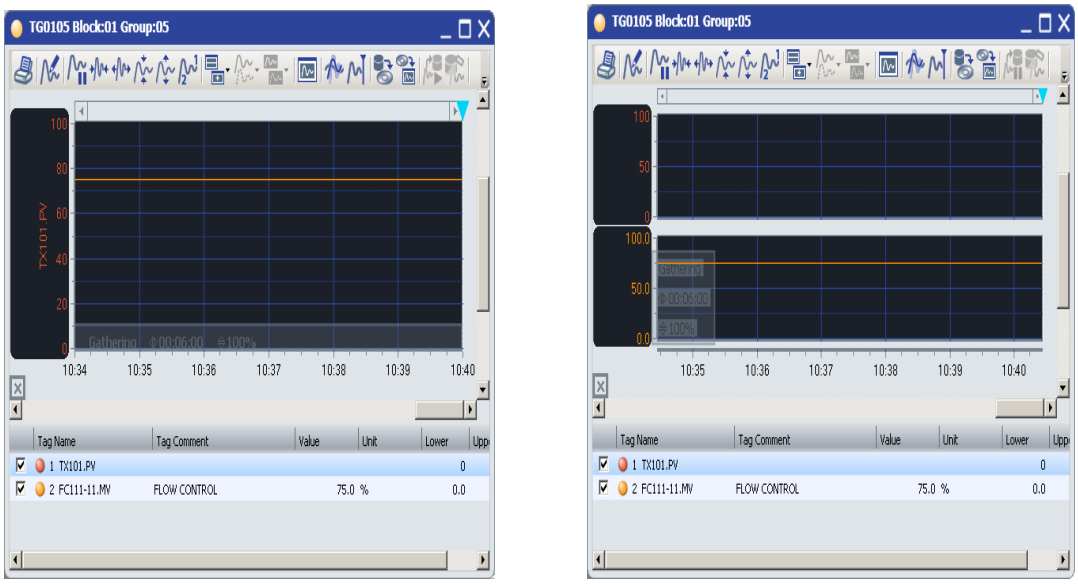
The selected display mode is retained as the previous state of display.

Normal Display Mode
The data of eight pens are displayed in one graph.
This is the display mode when [Standard Mode] is selected from the menu displayed by clicking the display mode switch button.

Tile Trend Modes
In a tile trend mode, trend graphs are tiled and displayed separately for each pen or data type.
The following tile trend modes are available:
•Pen-split tiling
•Analog/discrete-split tiling
•Trend data/reference pattern-split tiling (vertical)
•Trend data/reference pattern-split tiling (horizontal)
Each mode can be selected from the menu displayed by clicking the display mode switch button on the toolbar. In a tile trend mode, all pens are simultaneously scrolled as well as in normal display mode.

Pen-Split Tiling

To show the trend graphs separated for each pen, select [Tile Mode] from the menu of the display mode switch button.
The following figure shows an example of switching from normal display to a tile trend display where the graphs are separated for each pen.



Normal Display Pen-Split Tiling

Figure: Normal Display and Pen-Split Tiling

Analog/Discrete-Split Tiling
To show the trend graph separately for analog and discrete data, select [Data type separately] from the menu of the display mode switch button. [Data Type separately] can be selected when both analog data and discrete data are displayed in the Trend View.

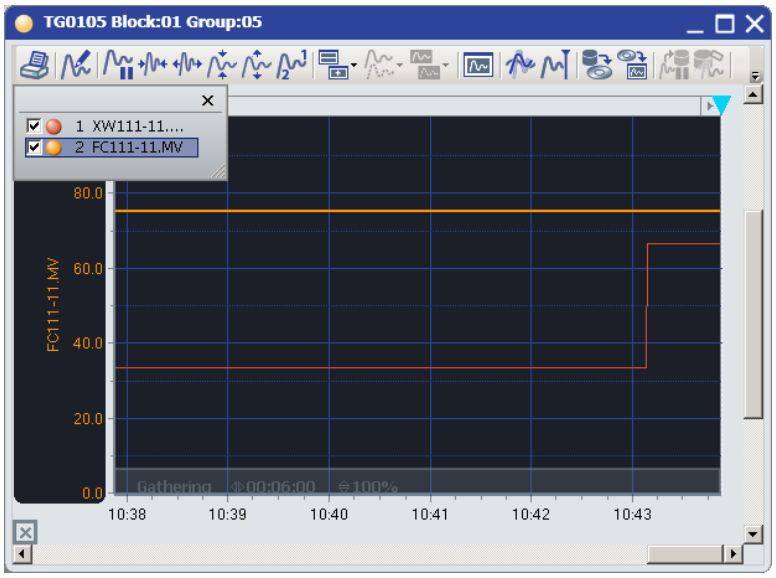


Figure: Analog/Discrete-Split Tiling

Trend Data/Reference Pattern-Split Tiling (Vertical/Horizontal)
Trend data/reference pattern-split tiling can be selected when any reference pattern is registered.
Select either [Trend/Reference separately (V)] or [Trend/Reference separately (H)] from the menu of the display mode switch button.
In the legend area, the information on the trend data is shown in the upper part and the information on the reference pattern is shown in the lower part.

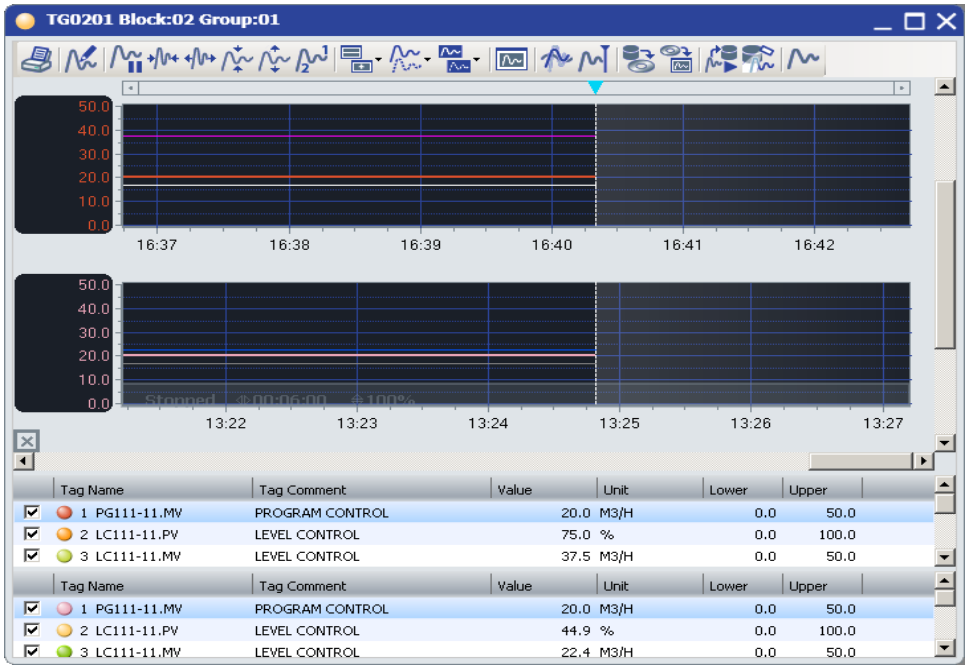


Figure: Trend Data/Reference Pattern-Split Tiling (Vertical) : Trend Data in Upper Part, Reference Pattern in Lower Part

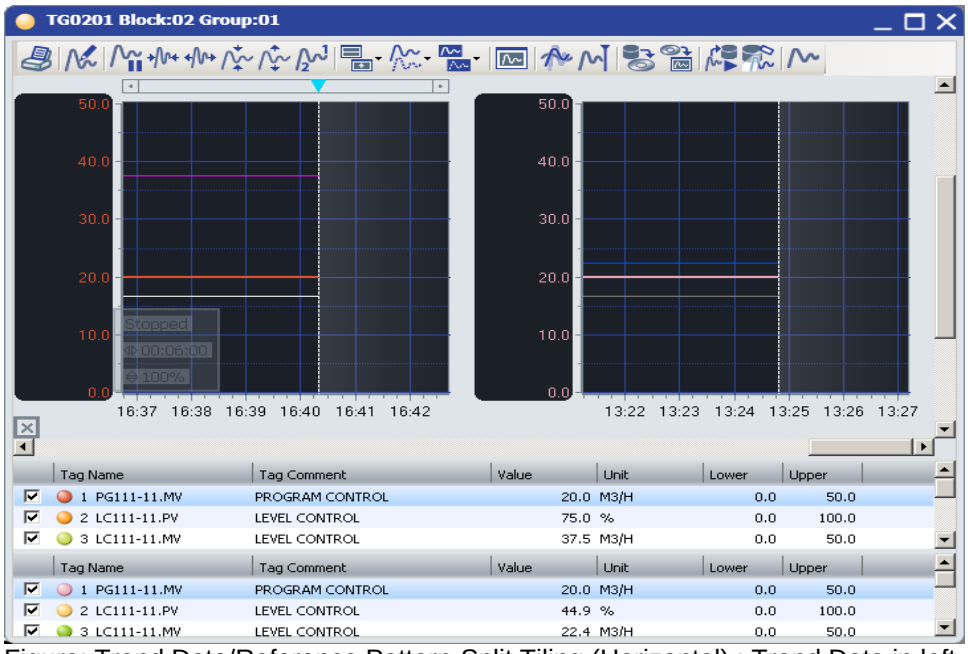


Figure: Trend Data/Reference Pattern-Split Tiling (Horizontal) : Trend Data in left, Reference Pattern in right

10.16. Export Trend Data to CSV File

The trend data can be exported to a CSV (Comma Separated Value) file.

Exporting Trend Data to CSV File

A designated trend group (eight trend pens) can be exported to a CSV file. After the data are exported into a CSV file, the data can be easily used by third-party software for reading, editing and parsing.

Setting Items for Exporting Trend Data to CSV File

When exporting trend data to a CSV file, the following items can be specified.
•Designating the data to be exported: Trend acquisition definitions, pen assignments or sampling status.
•Specifying the number of data samples to be exported
•Exporting the data in a specified time period
•Exporting the archived trend data to CSV file (*)
•Exporting the long-term trend data to CSV file
*Note:Files storing trend data sampled at different periods cannot be specified.

Start Exporting Trend Data to CSV File

Exporting trend data to CSV file can be started as follows.
•By a command script
•By assigning the command to a function key
•By calling from other programs.

Command Details

The details of the command for exporting trend data to CSV file are explained as follows.

Command Syntax

BKHTrCSV [-bpgdsBl] [-i id] [-t start_time end_time] [-n number] [-x form] [-F file_name] group_num | file_name

Path

<CENTUM VP folder>\Pogram\BKHTrCSV.exe

Description

The trend data that can be exported includes the collected trend data and archived trend data.
Data are exported in the order of their time stamps. The file name is specified right after the option -F. If the file name is omitted, the file is saved as follows.
<CENTUM VP folder>\his\save\trend\TGbbgg.csv
bb: Trend block number
gg: Trend group number

Exported File Sample 2

Command:
BKHTrCSV -ds -i TG0101 -t 10281352 10281353 -F TG0101_01.csv 0101

Export Source: TG0101
Export Records: User Defined ID, Sampled Data.
Export Data Range: 2008-10-28 13:52:00 to 2008-10-28 13:53:00
Export to File: <CENTUM VP folder>\his\save\trend\TG0101_01.csv
Print Sample:

@ID,TG0101
D,1,2008-10-28,13:52:00,JST,0.0,25.0,,55.0,15.0,55.0,1,,Q,,,Q,,Q,,
D,1,2008-10-28,13:52:01,JST,0.0,32.5,,55.0,25.0,55.0,1,,Q,,,Q,,Q,,

...
D,1,2008-10-28,13:53:00,JST,0.0,25.0,,55.0,15.0,55.0,1,,Q,,,Q,,Q,,

Error Return
When exporting to a CSV file is performed properly, a value 0 is returned. When exporting to a CSV file fails, a value 1 is returned. The result is logged to the following file.

•Windows XP
(Windows installed drive):\Documents and Settings\All Users\Application Data\Yokogawa\IA\iPCS\Products\CS3000\HIS\(log file name)

•Windows Vista
(Windows installed drive):\Program Data\Yokogawa\IA\iPCS\Products\ CS3000\HIS\(log file name)
Log file name: ProductsCS3000HISAllnnnn-YYYYMMDD.log
nnnn = serial number, YYYYMMDD = date

Notes on Export Command Execution
•Trend data are only exported according to the pen assignment defined on the builder. Even if the pen assignment has been changed on the Trend View, data will not be exported according to the changed pen assignment.
•When -l option is used to export the long-term trend data, it may take longer time to complete the exporting and the file size may become very big.
•This command can also export the trend data acquired by other stations.
•Multitasks are supported when running this. however, the multitasks can not target the same file. If two tasks are targeting the same file, the first task takes priority.
•This command can also use the trend data file in a network computer as the source for exporting.
•The applications that handle the CSV file may ignore the zeros after decimal points. For example, 2.00 is treated as 2.

10.17. Closing Processing

The Closing Processing creates closing data for statistical processing, such as average values and total values, based on trend data acquired by the Trend Recording.

Closing Processing

The Closing Processing calculates the data acquired from Trend Recording into the statistical data for report function such as the hourly, daily or monthly average, sum or other type of closing data.
The closing data saved as files can be used via OPC interface for Report (Report Package) or other functions.
Furthermore, via OPC interface, Microsoft Excel or other MS Windows' application can access the saved data.

The following figure shows the position of the Closing Processing.

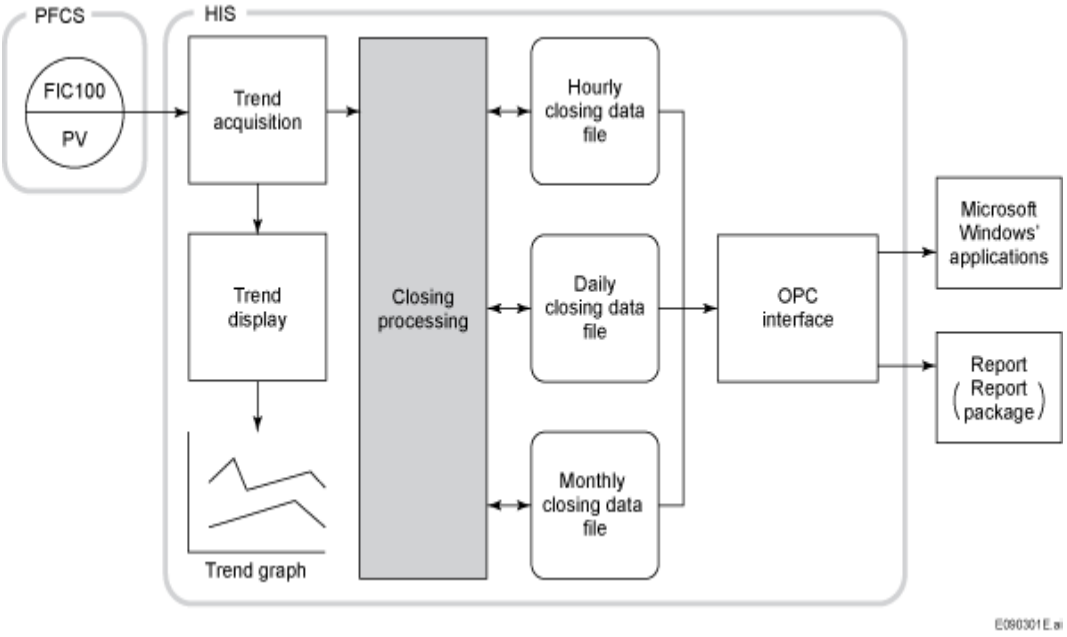


Figure: Position of the Closing Processing

Data Generated by Closing Processing

With the Closing Processing, the hourly, daily and monthly closing data are created.

Data for Closing Processing

The data that can be subjected to the closing processing must be specified for both of the following conditions on the builder:
•Sampling period of 1 minute, 2 minutes, 5 minutes or 10 minutes are specified in the properties sheet of the Trend Acquisition Pen Assignment Builder.
•Assigned to a trend acquisition pen in the Trend Acquisition Pen Assignment Builder, and specified as closing data.

Flow of Closing Processing
With the Closing Processing, hourly closing data is created by calculating the average, total, maximum and minimum values of one hour. Daily closing data is also created using the hourly closing data for 24 hours, and the monthly closing data using the daily closing data for one month.

The following figure shows the flow of the closing processing.

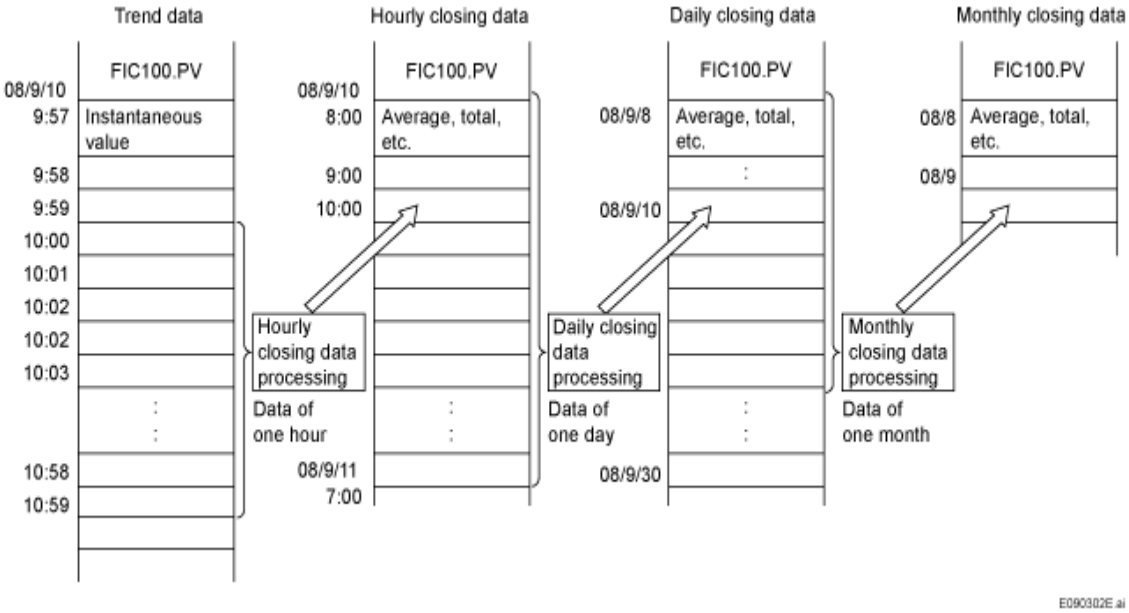


Figure: Flow of the Closing Processing

Hourly Closing Data Process
In the hourly closing data process, the trend data of the previous one hour are gathered from the saved trend data file, in which the trend acquisition pens specified for closing processing are also saved. The hourly closing data such as the average, total, maximum and minimum values are calculated for this one hour based on the gathered valid data. The calculated hourly closing data are stored into the hourly closing data files created for each trend acquisition pen.
Hourly closing data process is performed at the closing time of every hours.
The number of data points used for the hourly closing processing vary depending on the trend sampling period.
•Trend of 1-minute sampling period
Trend of 1-minute sampling period creates the hourly data using 60 points of data.
•Trend of 2-minute sampling period
Trend of 2-minute sampling period creates the hourly data using 30 points of data.
•Trend of 5-minute sampling period
Trend of 5-minute sampling period creates the hourly data using 12 points of data.
•Trend of 10-minute sampling period
Trend of 10-minute sampling period creates the hourly data using 6 points of data.

Daily Closing Data Process
In the daily closing data process, the hourly closing data of the previous 24 hours are gathered and the daily closing data are calculated for the day, including the average, total, maximum and minimum values. The calculated daily closing data are stored into the daily closing data files created for each trend acquisition pen. Daily closing processing is performed after the hourly Closing Processing at the daily closing time every day.
The default daily closing time is 0:00 am. The daily closing time may be changed using the closing processing tab of the HIS constants builder to meet the requirement of the plant operation. Unlike the hourly and monthly closing times which are fixed by the system, whether data acquired until the daily closing time is the data of the closing day or that of the previous day may be specified, and the daily closing time may be adjusted within the range of 0:00 to 23:00 (in hour units).

Monthly Closing Processing
In the monthly Closing Processing, the daily closing data of the previous one month are gathered, and the monthly closing data are calculated for the month, including the average, total, maximum and minimum values. The calculated monthly data are stored into the monthly data files created for each trend acquisition pen. Monthly closing processing is performed after the daily closing processing on the last day of each month.

Structure of the Closing Processed Data
Closing data are configured in units of record.
One record consists of data items such as average, total and quality flag for closing processing. By the quality flag, the data status of acquired data is classified as GOOD, BAD and QUESTIONABLE, then saved.

Number of Closing Processed Data
Up to 1000 data items (respectively for hourly, daily and monthly closing data) can be processed per HIS.

Save Period of Closing Processed Data

Each type of closing data may be saved for the following period:

Table: Save Period of Closing Processed Data

Closing data	Save period	Number of records
Hourly closing data	48 hours	9600
Daily closing data	62 days	12400
Monthly closing data	24 months	4800

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11. TUNING VIEW

The Tuning view displays a detailed control status for individual function blocks. This window can be used for monitoring and be used to change tuning parameters.

11.1. Oultine of the Tuning View

The Tuning view displays the control status of the function block. It is also used for adjusting the settings for various set points and control parameters, as well as for attaching and removing operation marks. The Tuning view is automatically created when a function block is created on the Function Block Overview Builder.

The figure below shows an example of a Tuning view.

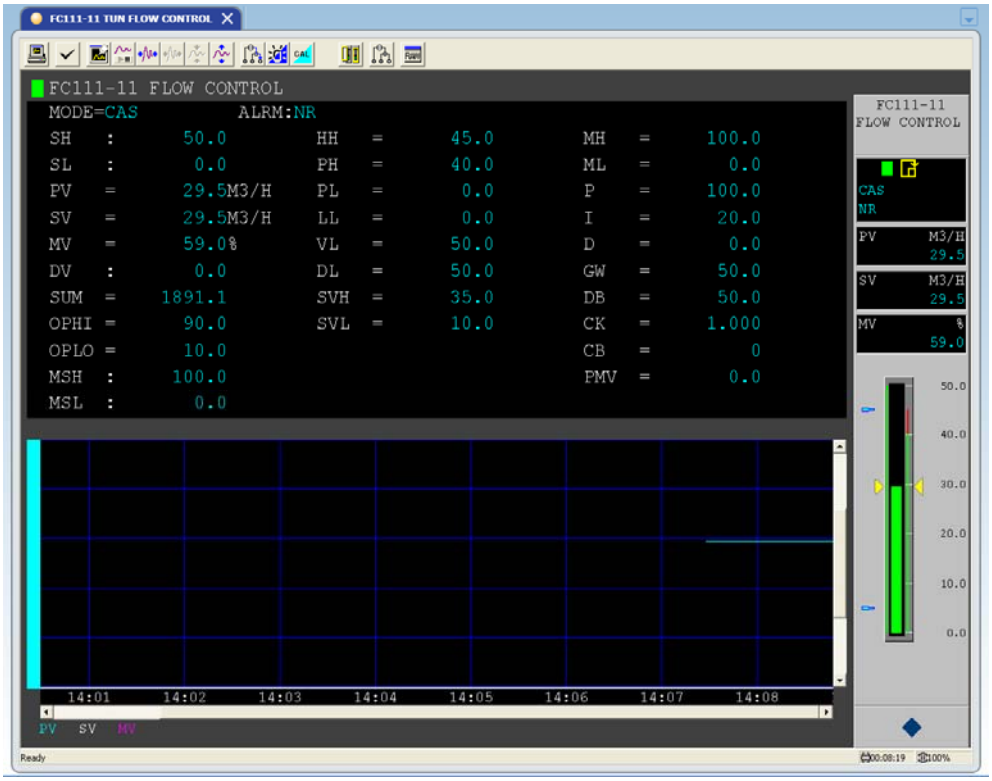


Figure: Tuning View

11.2. Components of Tuning View

The Tuning view consists of a toolbar, parameter display area, tuning trend display area, instrument faceplate, and status bar.

Toolbar of Tuning View

By using the Tuning view toolbar, operation marks can be added or removed, and the mode of the function block can be changed.

Figure: Tuning View Toolbar

The buttons on the Tuning view toolbar explained as follows.

This button outputs the image of the Tuning view currently displayed.

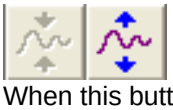
This button acknowledges the alarm generated in the function block that is displayed.

When this button is pressed down, the tuning trend data continues to be collected even when the Tuning view is closed; and the tuning trend is displayed when the Tuning view is called up the next time.
This button can be used when the tuning trend is displayed.

When this button is pressed down, the tuning trend display pauses. To resume updating the display, return the button to its original state.
When the button is returned to the original state, the tuning trend display resumes from the present time. Note that data acquisition continues even when the display is paused.
This button can be used when the tuning trend is displayed.

When this button is clicked, the tuning trend graph is reduced or enlarged in the direction of the time axis (horizontal direction), with the right edge (latest time) of the graph as the reference point.

This button can be used when the tuning trend is displayed.



When this button is clicked while the tuning trend graph is displayed in an analog format, the data axis display scale can be reduced or enlarged with respect to the displayed trend graph.
This button can be used when the tuning trend is displayed.

Clicking this button may change the function block to the primary direct block mode.
When this button is clicked, a dialog box appears to prompt for the operator's confirmation. To return to the original mode, double-click the mode display string in the parameter display area to call up the Data Input dialog box, then enter the mode name.
This button is displayed when the Tuning view is for a function block that supports the primary direct mode.

Clicking this button may change the function block mode to the AOF mode to suppress alarms.
When this button is clicked, a dialog box appears to prompt for the operator's confirmation. To return to the original state, click this button again.
This button is displayed when the Tuning view is for a function block that supports the AOF mode.

Clicking this button may change the data status to calibration status.
When this button is clicked, a dialog box appears to prompt for the operator's confirmation. To return to the original state, click this button again.
This button is displayed when the Tuning view is for a function block that supports the calibration mode.

This button calls up the Operation Mark Assignment dialog box.
In the Operation Mark Assignment dialog box, the operation marks for the instrument faceplate displayed in the Tuning view can be defined.
The figure below shows an example of an Operation Mark Assignment dialog box.

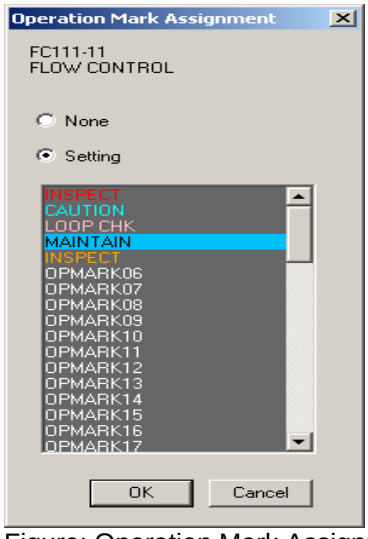


Figure: Operation Mark Assignment Dialog Box

The operation mark is for notifying the user of function block conditions such as "equipment maintenance," "malfunctioning" and "operation prohibited."

•Using the Operation Mark Assignment dialog box
When assigning an operation mark, select the operation mark to be assigned to the instrument faceplate and click the [OK] button. Also, to remove an operation mark that has already been assigned, select [None.]

•Security in the Operation Mark Assignment dialog box
In the Operation Mark Assignment dialog, a security is set for each operation mark. The security for the operation mark is determined by the function security level that has been defined by the builders. The operation marks for which the operator is not authorized to operate will not be displayed in the Operation Mark Assignment dialog.


Clicking this button calls up a Control Drawing view.


Clicking this button calls up a Sequence Table view.
This button is displayed depending on the type of function block.


Clicking this button calls up a Logic Chart view.
This button is displayed depending on the type of function block.

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Clicking this button calls up a SEBOL view.
This button is displayed depending on the type of function block.


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Clicking this button calls up an SFC view.
This button display varies with type of function block.


This button issues a start command to the function block.
This button is displayed for a timer block.


This button issues a stop command to the function block.
This button is displayed for a timer block.


This button issues an operation pause command to the function block.
This button is displayed for a timer block.


This button issues a restart command to the function block.
This button is displayed for a timer block.

This button calls up a dialog box to display RAW data.
This button is displayed for a function block with a data item “RAW.” Note that “*” (a communication error) is displayed if a function block input is not a process input.

Figure: RAW Dialog Box

Parameter Display Area of the Tuning View
The present values of the function block parameters are displayed in the parameter display area of the Tuning view. The types of displayed parameters vary with the type of function blocks.

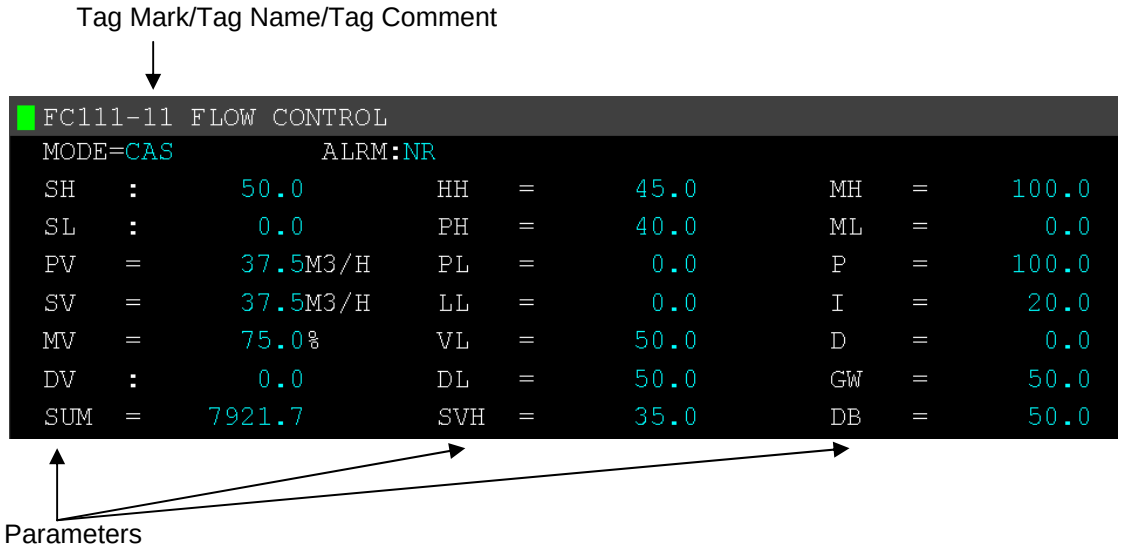

Figure: Parameter Display Area of the Tuning View

In the Tuning view parameter display area, a maximum of 10 digits for numeric data, 16 digits for character data, and 6 digits for engineering unit symbols can be displayed.

Show Tips of Data Items
The tips of the data items can be shown in the parameter area.
When the cursor is moved near a data item, the tip for the item will be shown. The tips of the data items may include the names of the defined parameters and variables as well as the attached descriptions.

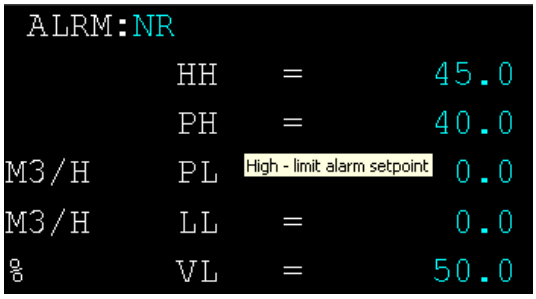

Figure: Show Tips of Data Items

Tuning Trend Display Area of Tuning View
The function block process data is plotted as the tuning trend in the Tuning view.

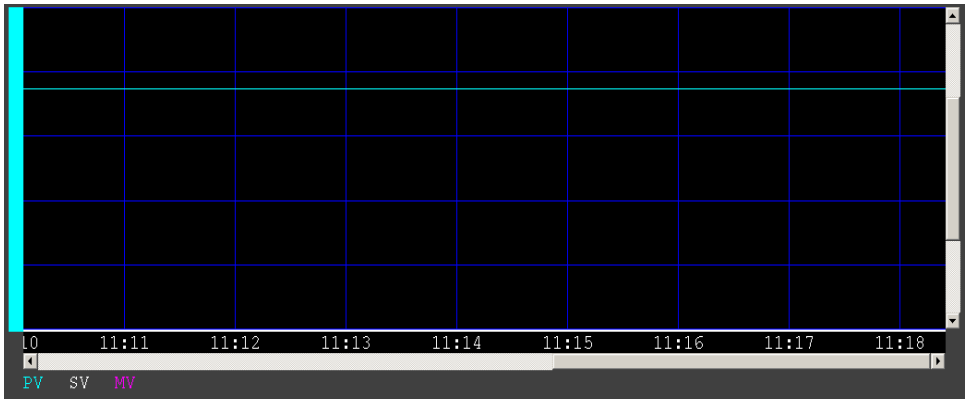

Figure: Tuning Trend Display Area of Tuning View

Acquiring the Tuning Trend
The tuning trend acquires process data from the function block displayed in the Tuning view and displays it as a graph. The sampling period is one second and a maximum of 2880 data can be displayed.

Tuning Trend Reserve
The tuning trend reserve function keeps tuning trend data acquisition continue after the Tuning view is closed. When using the reserve function, use the toolbar button shown below.

When this button is pressed down, the continued tuning trend can be displayed the next time that Tuning view is called up.

Also, when calling up a tuning trend that the reserve function is running, the stored data trend may be displayed and may be scrolled backwards. When calling up a tuning trend that the reserve function is not running, data acquisition starts at the time it is called up. The reservation function may be applied to maximum of 16 data trends within the same HIS. When the number of reserved data trend exceeds 16, the reservation functions are released to the tuning data trends in FIFO manner.

Pausing the Tuning Trend Data Update
When scrolling the tuning trend backwards, the trend data update automatically pauses. When the pause is released, the tuning trend is automatically displayed using the present time as the reference point.

Maximum Number of Tuning Trends can be Displayed
The number of displays is limited as follows.
The maximum number of tuning trends can be simultaneously displayed on one HIS should be no bigger than 16, including the Tuning Primitives assigned on Graphic view. If assigning more than 16 trends to one HIS, the tuning trend graphs may not be properly displayed.

Instrument Faceplate of the Tuning View
The instrument faceplates in the Tuning view graphically indicate the present value of process data and other data in the function block. By operating the instrument faceplate, parameter setting and changes as well as mode changes can be performed.

Status Bar of the Tuning View
The tuning trend's time-axis display span and the reducing/enlarging rate of the data axis scale of tuning trend are displayed in the Tuning view status bar.

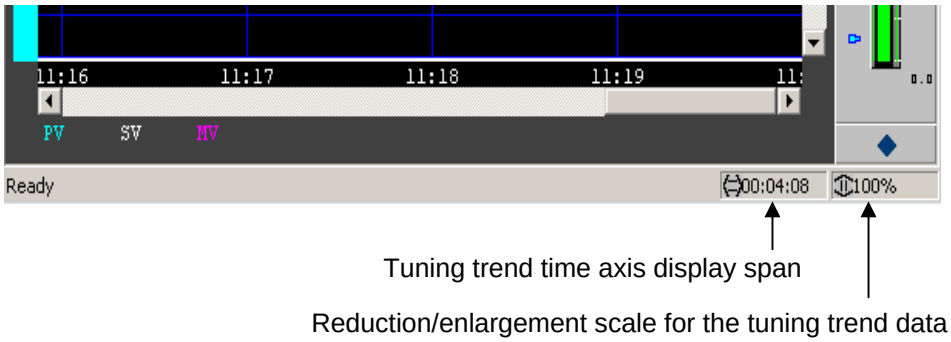

Figure: Status Bar of the Tuning View

12. SEQUENCE TABLE VIEW

The Sequence Table view displays the detailed mechanism programmed in a sequence table block, and the operation status of that sequence program.

12.1. Outline of Sequence Table View

The Sequence Table view can be used to monitor the scan status of the sequence table, status of conditions and actions. The extended sequence table can be called up too.
The figure below shows an example of a Sequence Table view.

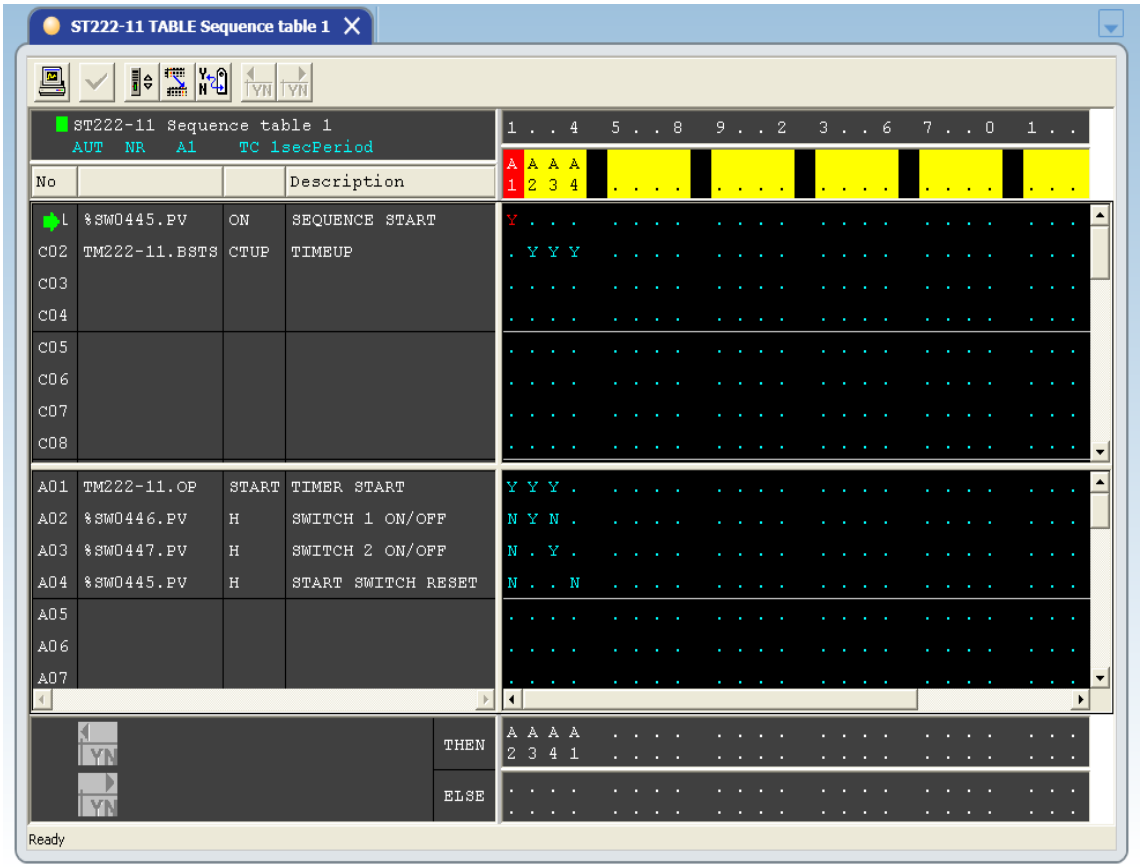

Figure: Sequence Table View
Use the Function Block Detail Builder to define the sequence table.

12.2. Components of Sequence Table View

The Sequence Table view consists of a toolbar and sequence table display area.

Toolbar of the Sequence Table View

Using the toolbar in the Sequence Table view, the step being executed can be changed or the Faceplate view for the sequence table block can be called up.

Figure: Toolbar of the Sequence Table View

The following paragraph explains the buttons in the Sequence Table view toolbar.

This button outputs the image of the current Sequence Table view.

This button cannot be used in the Sequence Table view.

This button calls up the Faceplate view displaying the sequence table block from which originally called up.
When the extended sequence table is being displayed, the Faceplate view called up is the one for the original sequence table.

Click the condition signal or operation signal may call up the Faceplate view displaying the function block of the selected signal.

This button is used to change the step to be executed.
Pop-out the Data Input dialog box , then the sequence table block PV value, i.e. the step that is the sequence table transition destination, can be entered.
This button can be used for a sequence table which has a step label display.

This button changes the comments displayed in the comment column for the condition signal or operation signal in the sequence table display area. Either the signal comment or tag comment is displayed in the comment column.

This button is used when changing the page in the extended sequence table.
The sequence table of the previous page of the Sequence Table view currently being displayed is called up.
This button can be used when there is an extended sequence table.

This button is used when changing the page in the extended sequence table. The sequence table of the next page of the Sequence Table view currently being displayed is called up. This button may be used when there is an extended sequence table.

The extended sequence table can also be called up by double-clicking the extended table label found at the lower left of the Sequence Table view.

Sequence Table Display Area of the Sequence Table View

In the sequence table display area of the Sequence Table view, the sequence table pre-defined by the builders will be displayed. The operator can monitor the control status of the sequence control block.

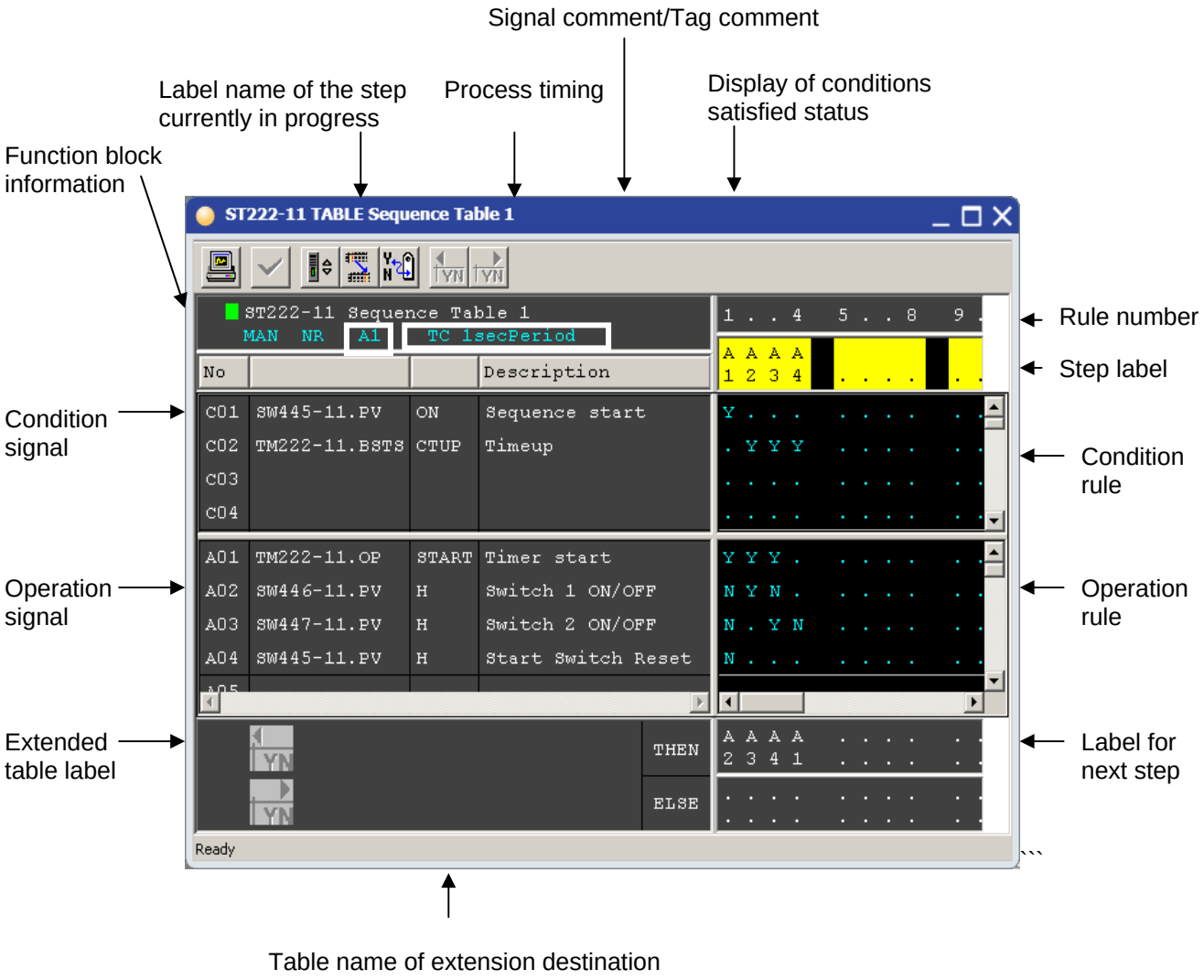

Figure: Sequence Table Display Area of the Sequence Table View

Process Timing
The process timing for the sequence table block is displayed. The following shows the process timing of the sequence table block.
•TE: Periodic start (T), output each time condition is satisfied (E)
•TC: Periodic start (T), output only when condition changes (C)
•OE: One-shot start (O), output each time condition is satisfied (E)
•OC: One-shot start (O), output only when condition changes (C)
•I: On initial cold start/restart (I)
•B: On initial cold start (B)

Condition Signal, Action Signal
The condition signal and action signal are defined by the tag name, data item, condition specifications and operation specifications. The action signal defines the operation object that is executed at the time the rule is satisfied by the status of the condition signal.
Also, using the toolbar button shown below, the comment displayed along with the condition and action signals can be toggled between the signal comment and tag comment.

The comment for condition and action signals and tag comment are defined with the Function Block Detail Builder.

Condition Rule, Action Rule
The condition and action rules are displayed in Y/N patterns. A condition is satisfied if the result of condition testing for the condition signal matches the pattern (Y: satisfied; N: not satisfied) in the condition rule. The action rule is processed when the result of the next condition rule is received. Processing is performed according to the pattern specified in the same rule for which conditions are satisfied.
The status of whether these rules are satisfied is displayed in distinct colors, and the pattern colors change.
•Red: Condition satisfied
•Cyan: Condition not satisfied
In a sequence table with a step label display, only the color of the pattern for the rule being executed changes.

Display of Status for whether Condition Satisfied
The satisfied status of the condition is displayed using the background color of the step label.
•Red: Condition satisfied
•Green: Condition not satisfied
•Yellow:
Non-executing (in the case of a sequence table with a step label display), or the sequence table block is in MAN or O/S mode.

Next Step Label
The label of the next step to advance to is displayed.
In the THEN label area, the next step to advance to upon satisfaction of the condition is shown. The label of the step to advance to upon non-satisfaction of the condition is shown in the ELSE label.

Extended Table Label
When there is an extension destination sequence table or extension origin sequence table in the sequence table that is displayed, the sequence table name is displayed.

13. LOGIC CHART VIEW

The Logic Chart view displays a logic chart defined using the Logic Chart Builder, and the completion status of a logic circuit.

13.1. Outline of Logic Chart View

The Logic Chart view visually displays the control progress.

The following figure shows an example of the Logic Chart view.

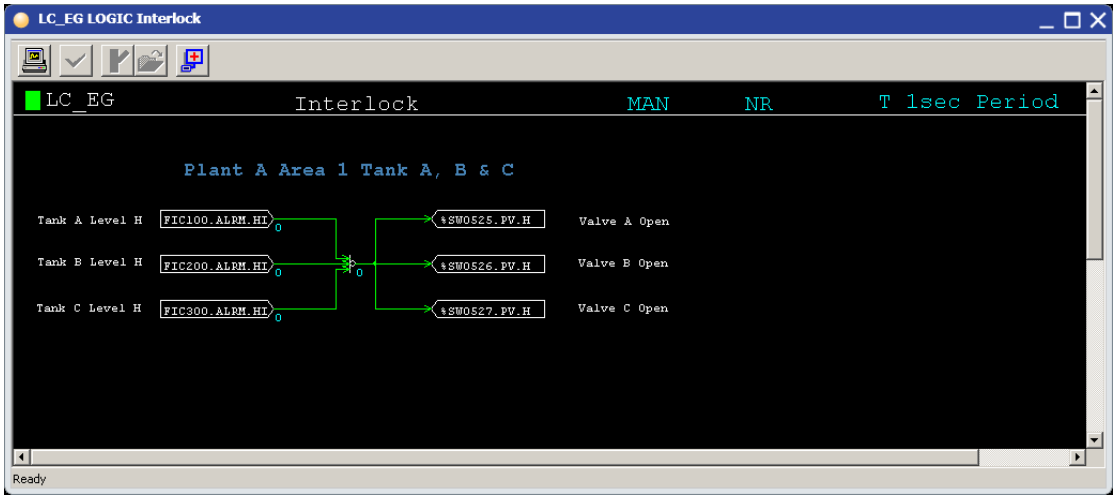

Figure: Logic Chart View

13.2. Components of Logic Chart View

The Logic Chart view consists of a toolbar and the logic chart display area.

Toolbar of the Logic Chart View

By operating the toolbar in the Logic Chart view, the window image can be output, and the Data Bind Switching dialog box can be called up.

Figure: Toolbar of the Logic Chart View

The buttons on the toolbar in the Logic Chart view is as follows:

This button outputs the image of the displayed Logic Chart view.

This button cannot be used in the Logic Chart view.

This button cannot be used in the Logic Chart view.

This button calls up the Data Bind Switching dialog box.
This button can be used only when a graphic generic name is used in the Logic Chart view.

This button calls up the dialog box for setting zoom levels.

Logic Chart Display Area of the Logic Chart View
The logic chart display area displays element symbols, wiring to connect the element symbols, the control status of the logic chart block, comments, etc.

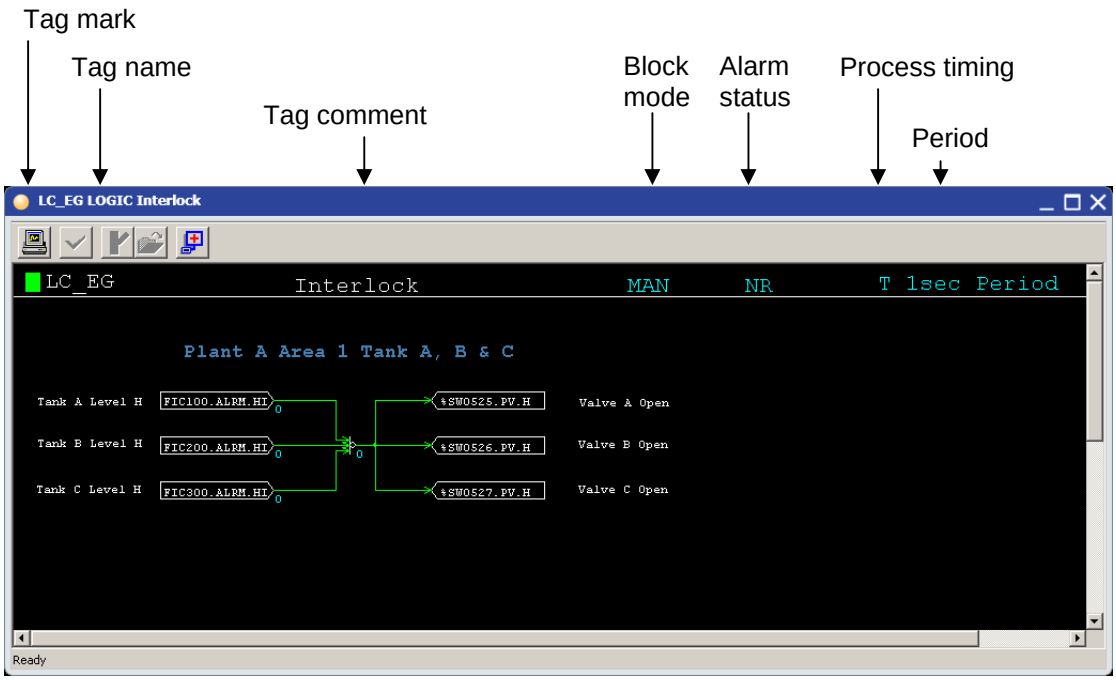

Figure: Logic Chart Display Area of the Logic Chart View

Completion Status of a Logic Circuit
The color of the line changes according to the progress of the process. The color of the output wiring for the input element and the logical operator changes when the wiring is completed; when it is completed, it is displayed in red, and in green when incomplete. A data value indicating the completion status (complete: 1, incomplete: 0) is displayed on the wiring.

Displaying the Mode and Status
The block mode and alarm status of the logic chart block are displayed.

Calling up Windows
By double-clicking an element or primitive displayed in the logic chart display area, or by pressing the display button with an element or primitive selected, another window can be called up.
•Double-click the symbol (condition signal, action signal) of an input element or an output element to call up a Faceplate view with the tag name of that symbol.
•Double-click the symbol of a timer element to call up the data entry dialog box.
•Double-click the display switching primitive to call up the Logic Chart view with the corresponding tag name.

14. WINDOWS FOR PROCESS STATUS AND OPERATION RECORD CONFIRMATION

As the windows used for confirming the process status, there are Process Report view and Historical Message Report window. In the Process Report view, the current status of the function blocks and input and output is displayed and in the Historical Message Report window, alarms and messages triggered in the past and the operation history are displayed.

14.1. Process Report View

Process Report view displays an overview of the control station process status.
The process report is to collect information on the system operating status and displays it in a window or prints to a printer depending on the user's request. The current status will be displayed or printed.
The following two types of reports are available in the Process Report view.
•Tag report
•I/O report

Report Output Destination
The following two types of output destinations are available for the report:
•Display in a window
•Print out to a printer

The figure below shows an example of a Process Report view.

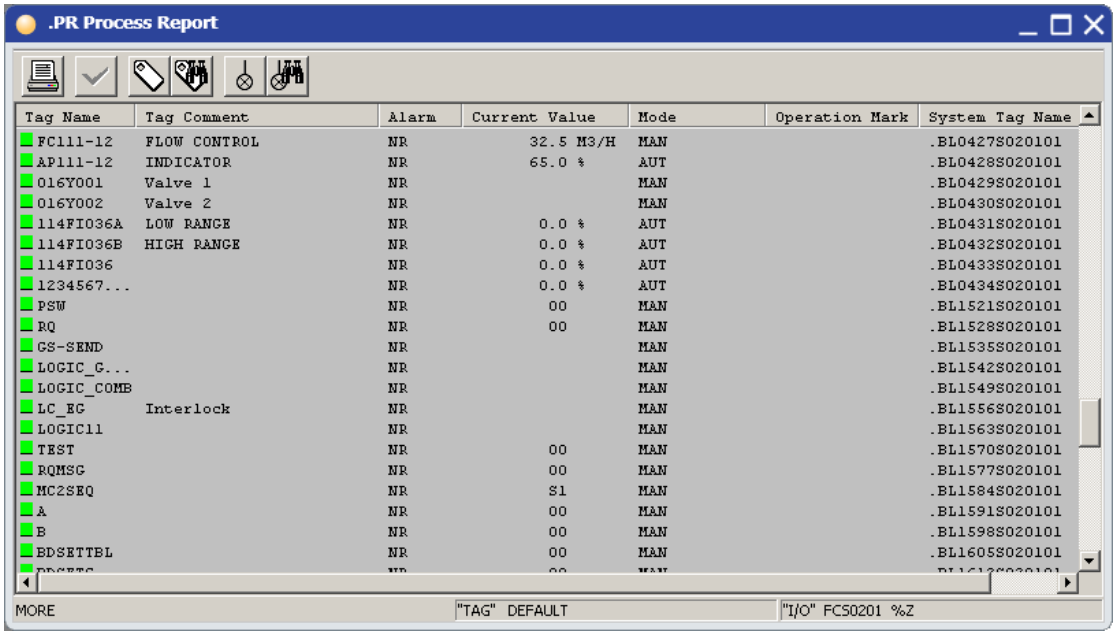

Figure: Process Report View (Tag Report)

14.2. Components of Process Report View

The Process Report view consists of a toolbar, report display area and a status bar.

Toolbar of the Process Report View

Using the toolbar of the Process Report view, the user can switch the display between the tag report and the I/O report, or print out the most recent status of the reports that are displayed. Both the tag report and I/O report come with their own search dialogs, in which the search conditions such as the station name or the element type can be entered.

Figure: Toolbar of the Process Report View

The following explains the buttons in the Process Report view toolbar.

This button prints out the most recent status of the report that is displayed.

No process report can be printed out unless the printer is set up for the process report.
Print settings for the process report are performed in the HIS Setup window in the system maintenance window.

This button cannot be used in the Process Report view.

This button displays the tag reports that meet the search conditions set in the Tag Report Search dialog box. The tab selected in the Tag Report Search dialog box will be the object of the search.
Clicking this button again while a tag report is shown displays the updated report with the same conditions.

This button calls up the Tag Report Search dialog box.

This button displays the I/O reports that meet the search conditions given in the I/O Search dialog box.

This button calls up the I/O Report Search dialog box.

Report Display Area of the Process Report View
Results of a search with the Tag Report Search dialog box or I/O Report Search dialog box are displayed in the report display area of the Process Report view.

Tag Name	Tag Comment	Alarm	Current Value	Mode	Operation Mark	System Tag Name
FC111-12	FLOW CONTROL	NR	32.5 M3/H	MAN		.BL0427S020101
AP111-12	INDICATOR	NR	65.0 %	AUT		.BL0428S020101
016Y001	Valve 1	NR		MAN		.BL0429S020101
016Y002	Valve 2	NR		MAN		.BL0430S020101
114FI036A	LOW RANGE	NR	0.0 %	AUT		.BL0431S020101
114FI036B	HIGH RANGE	NR	0.0 %	AUT		.BL0432S020101
114FI036		NR	0.0 %	AUT		.BL0433S020101
1234567...		NR	0.0 %	AUT		.BL0434S020101
PSW		NR	00	MAN		.BL1521S020101
RQ		NR	00	MAN		.BL1528S020101
GS-SEND		NR		MAN		.BL1535S020101
LOGIC_G...		NR		MAN		.BL1542S020101
LOGIC_COMB		NR		MAN		.BL1549S020101
LC_EG	Interlock	NR		MAN		.BL1556S020101
LOGIC11		NR		MAN		.BL1563S020101

Figure: Report Display Area of the Process Report View (Tag report)

Status Bar of the Process Report View
The following items are displayed on the status bar of the Process Report view.
•Name of tab selected in the Tag Report Search dialog box
(when the tag report is displayed)
•Element type selected in the I/O Report Search dialog box

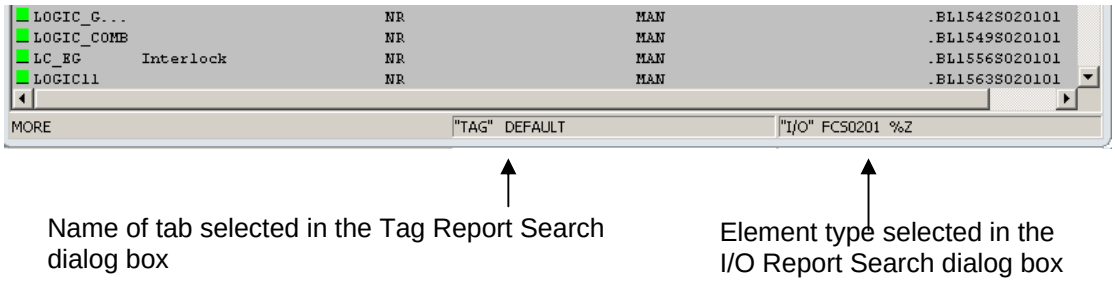

Figure: Status Bar of the Process Report View (Tag Report)

14.3. Tag Report Search and Display

In a tag report, various statuses such as the function block alarm status, mode and present value of process data are displayed for each element. A tag report can be searched by station name, tag name or alarm status.
Tag names of the following elements can be the object of a tag report.
•Function block (%BL)
•Annunciator (%AN)
•Common switch (%SW)
•Process I/O (*1)
•Global switch (%GS)
The tag report search is done using the Tag Report Search dialog box.
*1:Among the process I/O, only communication I/O with user-defined tag names can be the object of a tag report.

Search Using the Tag Report Search Dialog Box

There are five tabs in the Tag Report Search dialog box. Once the search conditions is set, the previous values will be displayed again as it is. Therefore, it is convenient to set frequently used search conditions beforehand.
Click the [OK] button after setting search conditions to start the search. The results of the search will be displayed in the Process Report view.
Also, the tab selected at the time the Tag Report Search dialog box is closed with the [OK] button, will be used as the search conditions the next time the tag report is displayed.

The figure below shows an example of the Tag Report Search dialog box.

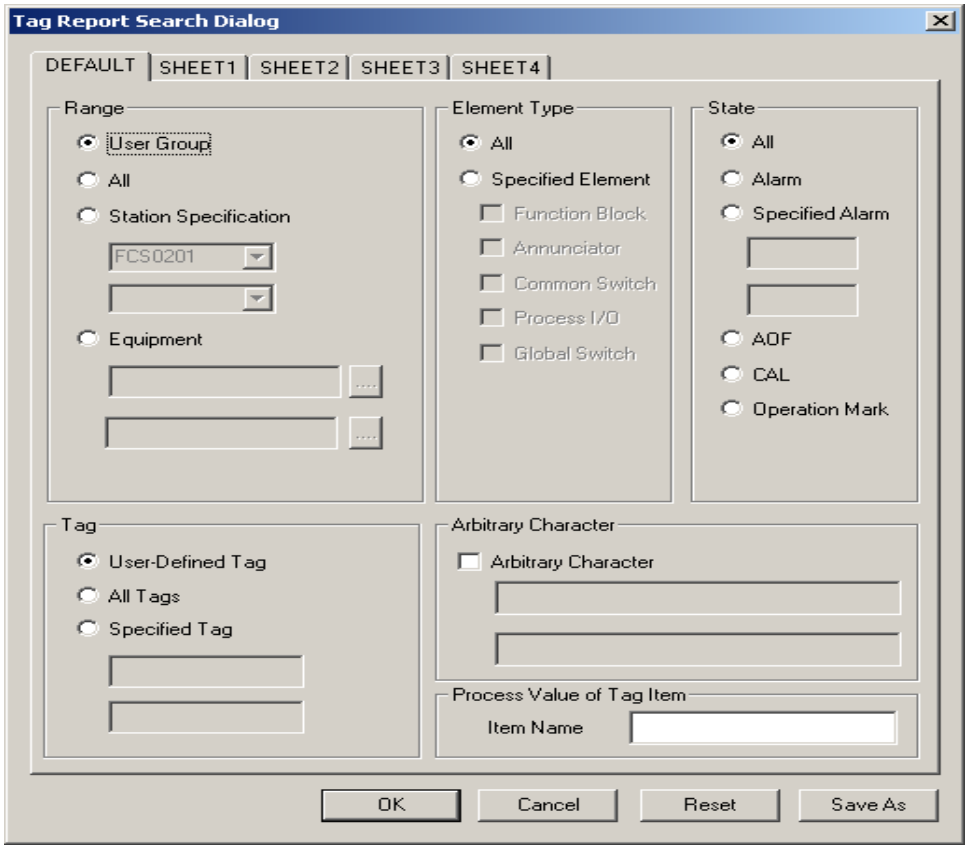

Figure: Tag Report Search Dialog Box

Range
Any one of the following objects can be searched: all function blocks in a user group, all function blocks within a project, function blocks in a specific station, or function blocks of a specific hierarchy. The names pre-defined by the builders appear in the station name and plant hierarchy name (control drawing name, batch ID, unit instrument tag name) list. Also, a character string containing a wild card such as " * " can be set in the station name and plant hierarchy name. Specification examples are given below.
•When [%DR0021S010201] is specified
Searches for the function block defined in domain 01, station 02, area 01, control drawing 21.

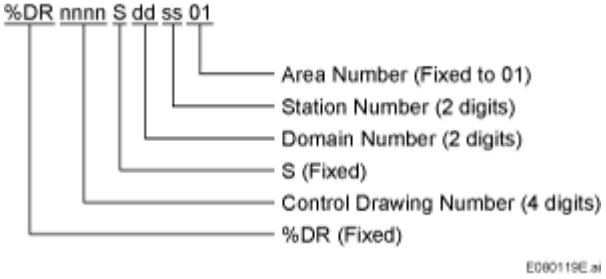

Figure: Identifiers in the String

•When [%DR003*] is specified
Searches for a function block defined in control drawing block number 30's.

•When [UT1] is specified**
Searches for a function block that is a unit instrument with a tag name between UT100 and UT199.

Element Type
Either all elements or specific element is selected and searched.

Status
One of the following can be used as the search condition: all statuses, function blocks in alarm state, function blocks in AOF state, function blocks in CAL state, or function blocks with operation marks. Moreover, the alarm status to be used as the search condition can be set as desired.

Tag
In addition to all user-defined tag names and all tag names (user-defined tag names and system tag names), the user can freely set a tag name for search. When setting the tag name, a character string containing a wild card such as " * " can be used.

Arbitrary Character
Up to 32 arbitrary characters can be entered for a search. All characters displayed in the window, such as tag name, tag comment, alarm status, mode or operation mark comment, can be the search object.

Process Value of Tag Item
A data item name can be added to process report view for displaying the data value. For an example, a data item [BSTS] can be used to indicate the block status. However, the data item with array data can not be used.
If no data item is designated in the process report view, under the data item column, no data item displays.
If the data access fails, [*****] displays.

Conditions Clear
This initializes all settings in the displayed sheet to their initial values.

14.4. I/O Report Search and Display

In the I/O report, the I/O status is displayed as a digital value for each element. An I/O report can be searched by station name or element type.
The following elements can be the objects of an I/O report:
•Annunciator (%AN)
•Common switch (%SW)
•Communication I/O (%WB)
•Process I/O (%Z)
The I/O report search is done using the I/O Report Search dialog box.

Search Using I/O Report Search Dialog Box

The station name or element type of the control station can be set as the search conditions for the I/O report in the I/O Report Search dialog box.
Click the [OK] button after setting search conditions to start the search. The results of the search will be displayed in the Process Report view.
Also, the search conditions set at the time the I/O Report Search dialog box is closed with the [OK] button, will be used for the search conditions the next time the I/O report is displayed.

The figure below shows an example of the I/O Report Search dialog box.

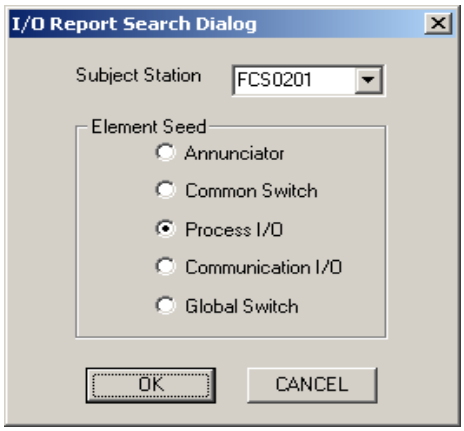

Figure: I/O Report Search Dialog Box

I/O Report Display

The results of the search in the I/O Report Search dialog box are displayed in the Process Report view (I/O report).
When the data is ON, “1” is displayed.
When the data is OFF, “.” (period) is displayed.
Data is periodically refreshed in the I/O report display.
The figure below shows an example of a Process Report view (I/O report).

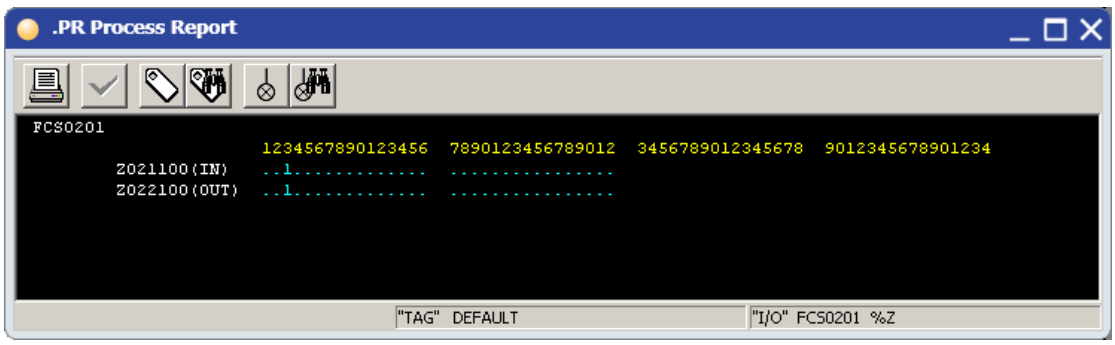

Figure: Process Report View (I/O Report)

15. HISTORICAL MESSAGE REPORT WINDOW

The Historical Message Report window displays an overview of historical messages such as the history of each alarm message type or the operator's operation history.

If CAMS for HIS is enabled, when calling Historical Message Report window, Historical Viewer of CAMS for HIS will be displayed.

15.1. Outline of the Historical Message Window

The historical message report can retrieve process alarms or the operation history stored within the HIS and display or print messages related to all types of events related to the system or a process that occurred in the past.
A historical message can be retrieved and displayed by specifying message type, station name and tag name.
The figure below shows an example of a Historical Message Report window.

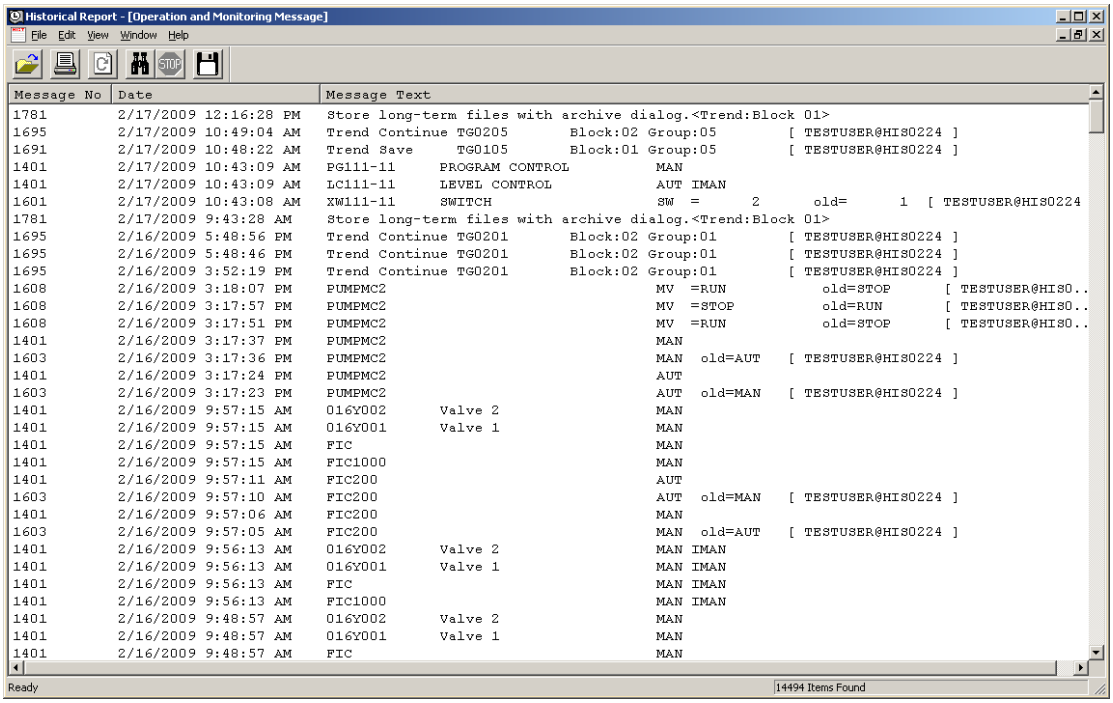

Figure: Historical Message Report Window

15.2. Components of Historical Message Report Window

The Historical Message Report window consists of a menu bar, toolbar, report display area and status bar.

Menu Bar in the Historical Message Report Window

The menu bar of the Historical Message Report window consists of the same menu items as toolbar buttons and the ones that modify printer settings and window display style.
The menu items same as the toolbar buttons are shown in the table below.

Table : Menu Items with the Same Function as Toolbar Buttons

Menu item		Toolbar button
File	Open	
	Save	
	Print	
Edit	Find	
	Pause	
View	Redraw	

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Other menus are the same as the Windows menu bar.

Toolbar of the Historical Message Report Window

Operating the toolbar of the Historical Message Report window, the user can specify filter conditions for the historical message to be displayed and print out the current report.

Figure: Toolbar of the Historical Message Report Window

The following explains the buttons in the Historical Message Report window toolbar.

This button calls up the File Select dialog box. This is the same as [Open] in the File menu. Historical messages are saved separately according to the message type. In the file selection dialog box, the user can select the type of historical message to display, a folder name can be specified when saving a historical message file into a folder other than the standard folder.

This button prints out all historical messages retrieved.
It is the same as [Print] in the File menu.

This button refreshes the displayed historical messages to the latest status.
It is the same as [Redraw] in the View menu.

This button calls up the search dialog box for setting the search conditions.
It is the same as [Find] in the Edit menu.

This button aborts the historical message search being executed. This button can be used after the search has begun.
It is the same function as [Pause] in the Edit menu.

This button outputs the currently displayed historical message to a file. It is the same as [Save] in the File menu.

Specify a file name and a storage location, and then click the [Save] button to output the historical message to the specified text file in the CSV format.

If the total number of the messages exceeds 65,536 when output to a file in the CSV format, MS Excel cannot read them. The following dialog box is called up at the point the total number of the messages exceeds 65,536 when output:

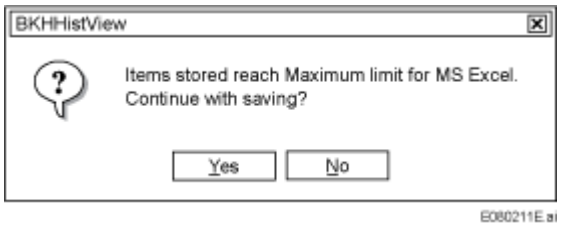


Figure: BKHHistView Dialog Box

Selecting [Yes] continues on to output all messages to the specified file.
Selecting [No] outputs up to 65,536 messages to the specified file.

Report Display Area of the Historical Message Report Window
The date and time stamped on the historical message and the message contents are listed in the report display area of the Historical Message Report window.

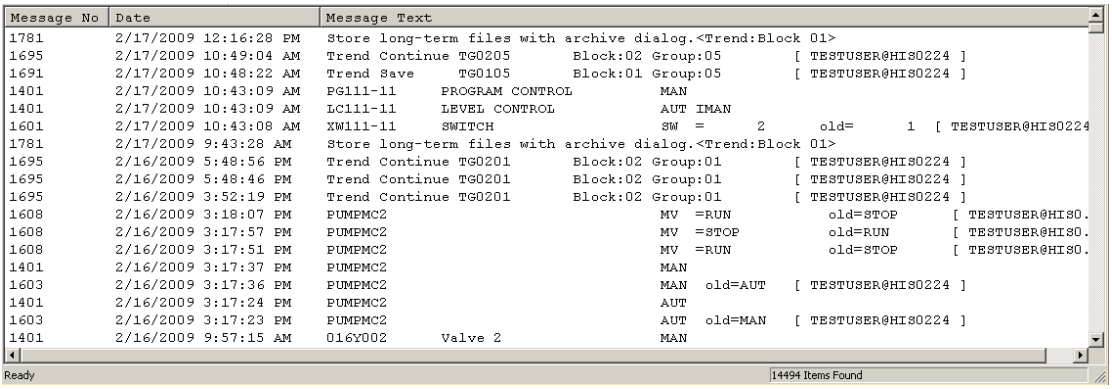
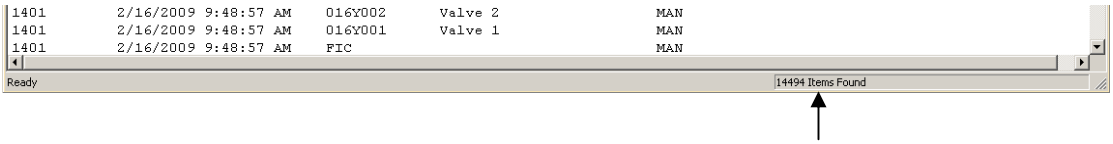


Figure: Report Display Area of the Historical Message Report Window

Status Bar of the Historical Message Report Window
The number of historical messages retrieved is displayed in the status bar of the Historical Message Report window.



Number of historical messages retrieved

Figure: Status Bar of the Historical Message Report Window

15.3. Selecting a Historical Message Search Object

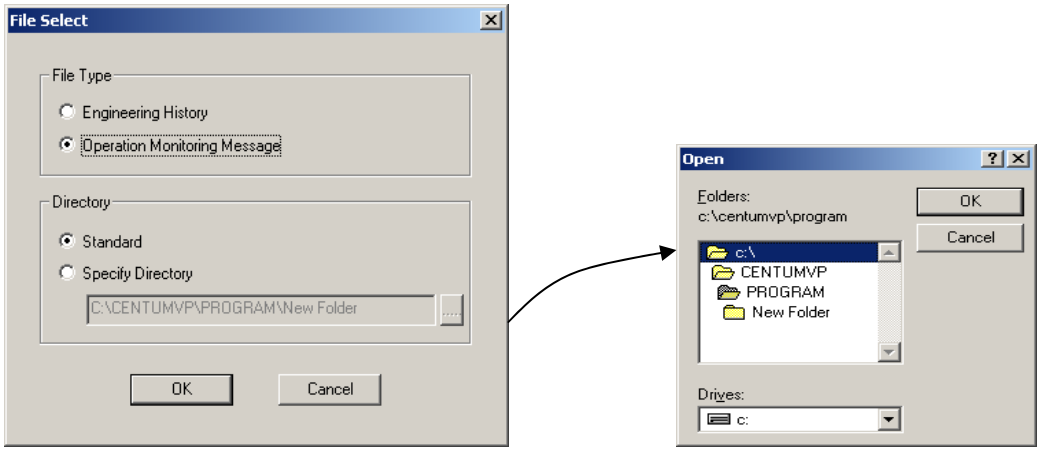
Before executing a search for historical message, select the file in which the message to be retrieved is stored.

Calling up the File Select Dialog Box

The File Select dialog box may be called up by using a button in the Historical Message Report window toolbar or [Open] in the File menu.
To call up the File Select dialog box from the toolbar, use the toolbar button shown below.

Selecting the Storage File for the Historical Message

The file to be searched for can be changed in the File Select dialog box.



Dialog box to be opened

Figure: File Select Dialog Box

File Type

When searching for a message that occurred at the time of system generation, select [Engineering History]; when searching for a message that occurred during operation and monitoring, select [Operation and Monitoring Message].

Directory

When the historical message save file is stored in the default folder, select [Standard]; when the file is stored in a folder other than the standard, select [Specify Directory].
An example of specifying a directory: C:\CENTUMVP\LOG\HISHIST

15.4. Searching for a Historical Message

Use the Search dialog box to set the historical message search conditions.
The items shown below can be used as keywords for a search in the HIS historical message report.

- Specifying a time interval using date and time
- Specifying message type
- Specifying message origin
- Specifying user name
- Specifying arbitrary character

Calling up the Search Dialog Box

The search select dialog box is called using the button on the toolbar of the Historical Message Report window or [Search] in the Edit menu.
To call up the Search dialog box from the toolbar, use the toolbar button shown below.

Searching for a Historical Message

Each of the search conditions is set in the Search dialog box.
In the Report Search dialog box, there are five tab to set up search conditions. Select the tab to set for each search item.
The search conditions specified at the time the Search dialog box is closed will be used as the search conditions the next time the Historical Message Report window is displayed.
When [All] is selected, other conditions that have been set will become invalid.
The wild cards " * " and "?" can also be used for searching.
The examples below show the use of wild cards.

- [FIC1??]:
Searches for the function blocks with tag names of between FIC100 and FIC199.

- [TIC*]:
Searches for the function blocks whose tag names begin with TIC.

Searching in a Period Specified by Dates

The Search dialog box used when searching for a historical message by specifying the date.

Searching by Specifying a Message Type

It is used to search for a historical message by specifying a message type:

Searching by Specifying a Message Occurrence Source

It is used to search for a historical message by specifying a message occurrence source.

Searching by Specifying a User Name

It is used to search for a historical message by specifying a user name:

Searching by Specifying an Arbitrary Character

It is used to search for a historical message by specifying an arbitrary character.

16. SYSTEM STATUS OVERVIEW

The System Status Overview displays the statuses of all stations and the communication devices within the domain in a list (*1). The outline of the System Status Overview will be introduced below.
*1:A domain includes all the stations connected with one segment of control buses. The control bus here means V net. When using Bus Converter to connect with different control bus or different vendor's system, a virtual V net domain can be defined.

16.1. Outline of the System Status Overview

The figure below shows an example of the System Status Overview.

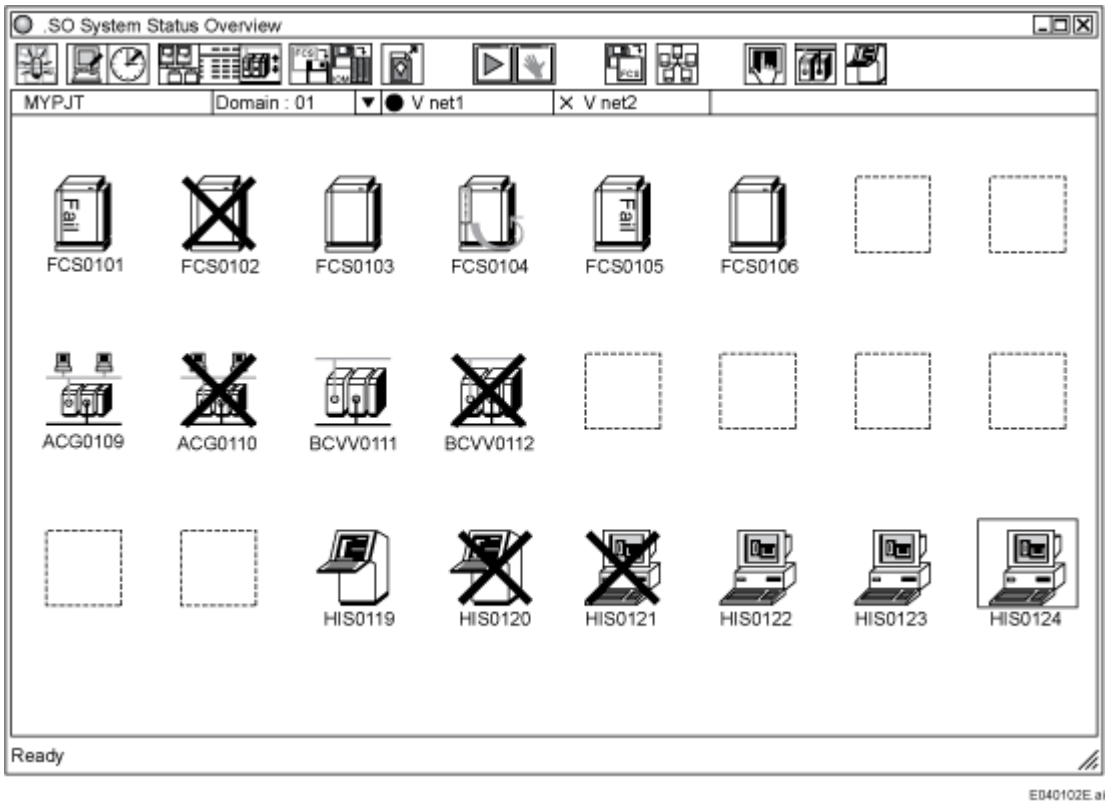


Figure: System Status Overview

The System Status Overview displays the statuses of all stations and the communication devices within the domain in details by various icons. From here, the windows of system maintenance can be called up.

16.2. Components of System Status Overview

The System Status Overview consists of a toolbar and a status display area.

Toolbar of the System Status Overview

Clicking the buttons on the Toolbar of System Status Overview can call up another window and change the display style of System Status Overview.
The buttons on the Toolbar are as follows:

Figure: Toolbar of the System Status Overview

The following paragraph explains the buttons in the toolbar.


This button is for calling System Alarm View.
The change of the button status indicates the occurrence of system alarm messages.
•Flash in red:
System alarm messages have occurred whose contents have not been acknowledged yet.
•Constant red:
System alarm messages have occurred whose contents have already been acknowledged.
•Others:
System alarm messages are not occurring.


This button calls up the HIS Setup window.


This button calls up the Adjust Time dialog box.


This button cannot be used in the System Status Overview.


Clicking this button may change the Status Display area to List-Style / Icon-Style.

This button is for calling the System Status Overview of the domain connected through the bus converter.


This button cannot be used in the System Status Overview.


This button cannot be used in the System Status Overview.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This button calls up the System Report dialog, which displays the system information.
The contents of the dialog display can be printed or output to a file.

This button cannot be used in the System Status Overview.

This button cannot be used in the System Status Overview.

This button cannot be used in the System Status Overview.


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This button is for disabling the System Status Overview (Grayed Out).


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This button calls up the Touch Target Maintenance dialog box.
This button is displayed on the console type HIS.


E040117E.ai

This button calls up the V net Setup dialog box.
This button is displayed on the console type HIS.


E040118E.ai

This button calls up the HIS Status Display view for the current station.
This button is displayed on the console type HIS.

Status Display Area of System Status Overview
The running statuses of all stations and the communication devices within the domain are displayed in the Status Display area.
The status display option for displaying in a list or displaying by icons is selectable. Displaying by icons is the default option.
An example of displaying by icons is shown below.

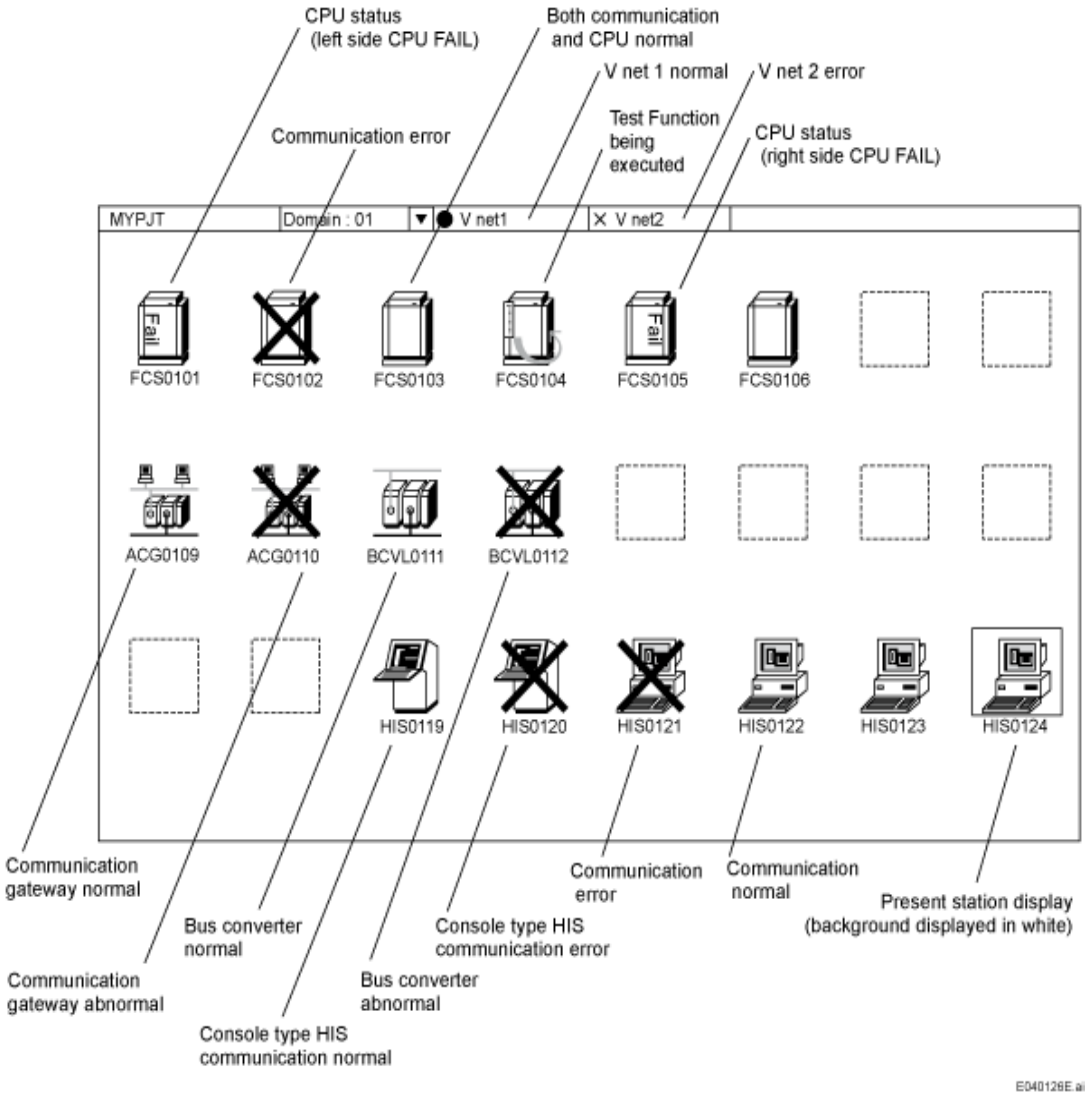

Figure: Status Display Area of System Status Overview (Icons)

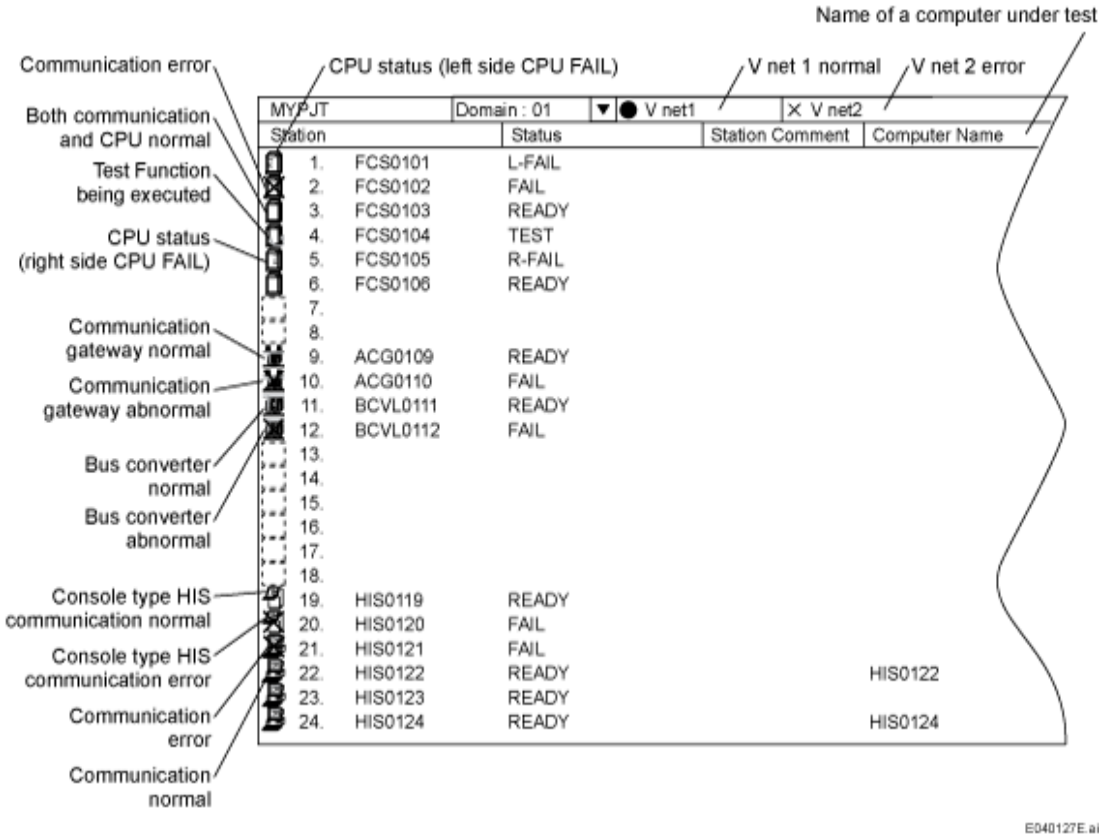

Figure: Status Display Area of the System Status Overview (List Style)

In the above example, HIS0122 and HIS0124 are running the Test Functions. And the columns of [Station] and [Computer Name] are shown as follows:

Station	Computer
FCS0103	
FCS0104	
⋮	
HIS0122	HIS0122
HIS0123	
HIS0124	HIS0124

Icon Display
Icons displayed in the status display area vary with model names. The correspondence between model names and icons are shown below.


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HIS: General-purpose PC for operation and monitoring
Other: MOPS, EOPS, EDFS, EDFW, ENGS, HP9000, COPSV*A, COPSV*B, COPS2*B


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HIS: Console type HIS


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FCS: PFCS-S, PFCD-S, PFCS-E, PFCD-E, PFCS-H, PFCD-H, AFS10S-H, AFS10D-H, AFS20S-H, AFS20D-H, AFS30S-H, AFS30D-H, AFS40S-H, AFS40D-H, AFG10S-H, AFG10D-H, AFG20S-H, AFG20D-H, AFG30S-H, AFG30D-H, AFG40S-H, AFG40D-H, AFS81S, AFS81D, AFS82S, AFS82D, AFS71S, AFS71D, AFS72S, AFS72D, AFS83S, AFS83D, AFS84S, AFS84D, AFF50S, AFF50D, AFF30S, AFF30D
Other: MFCD-EXT, MFCD-STD, MFCN-EXT, MFCN-STD, MFCU-EXT, MFCU-STD, MFMU-EXT, MFMU-STD, MFSD-EXT, MFSD-STD, MFSU-EXT, MFSU-STD, EFCD, EFCS, EFCDH2, EFCSH2, EFMS, EFUD, EFUS, CFCD2, CFCS2, CFMS2, CFSD, CFSS, SCS01, SSC10S, SSC10D


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BCV: ABC11D-V
Other: EFGW, ECGW, ECGW2, ECGW3, CFGW, CGWU-1, CGWU-2, CGWU-1/A, CGWU-2/A


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ACG: ACG10S-E, ACG10S-F

16.3. System Report Dialog Box

The System Report dialog box can be called from the System Status Overview for displaying the system information.

Displaying the System Report

Use the toolbar button shown below to call up the System Report dialog box.

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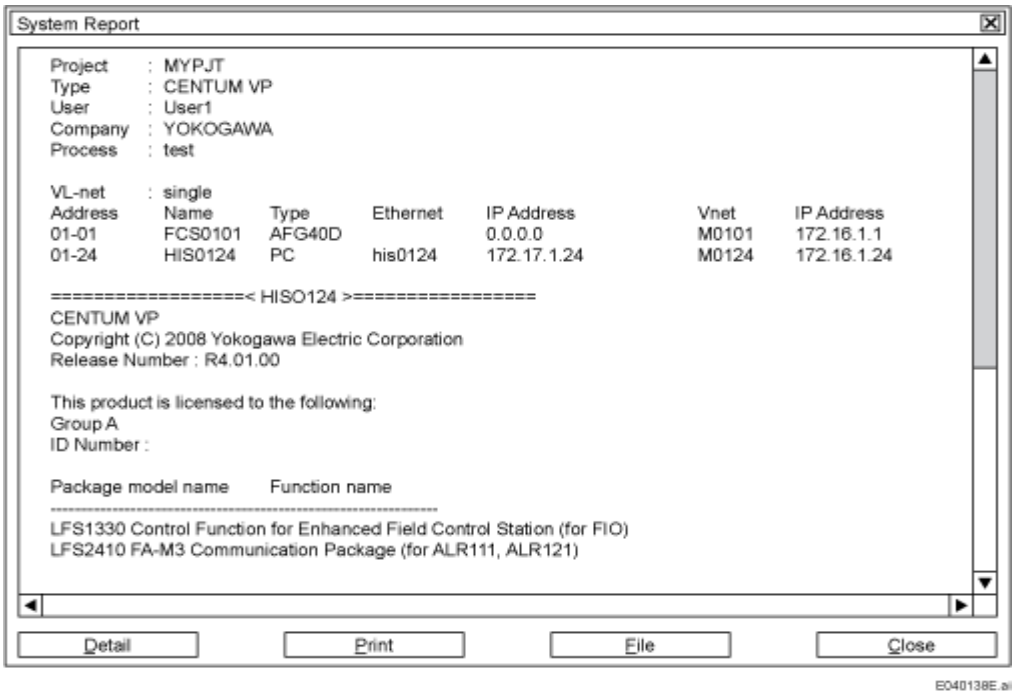
The figures below shows an example of the System Report dialog box.



E040138E.ai

Figure: System Report Dialog Box

•Detail

This button saves information of the entire system in a floppy disk. The default name of the file for the saved information is “RevInf.csv.”

•Print

This button prints the contents displayed in the System Report dialog box. The displayed contents are output to a printer set in the HIS Setup window.

•File

This button stores in a floppy disk the contents displayed in the System Report dialog box. The default name of a file for storage is “SysRevInf.txt.”

•Close

This button exits the System Report dialog box.

16.4. FFCS Status Display View

FFCS Status Display view is for displaying the FFCS hardware configurations and FFCS running status.

What is the FFCS Status Display View?
The FFCS Status Display view displays the FFCS' station information, hardware configuration and its status, and whether or not the communication bus status is normal in color, so that users can visually check the system status at a glance. Using the FFCS Status Display view, users can start or shut down the control station currently being displayed in the window, or display the node status.

The figure below shows a display example of the FFCS Status Display view.

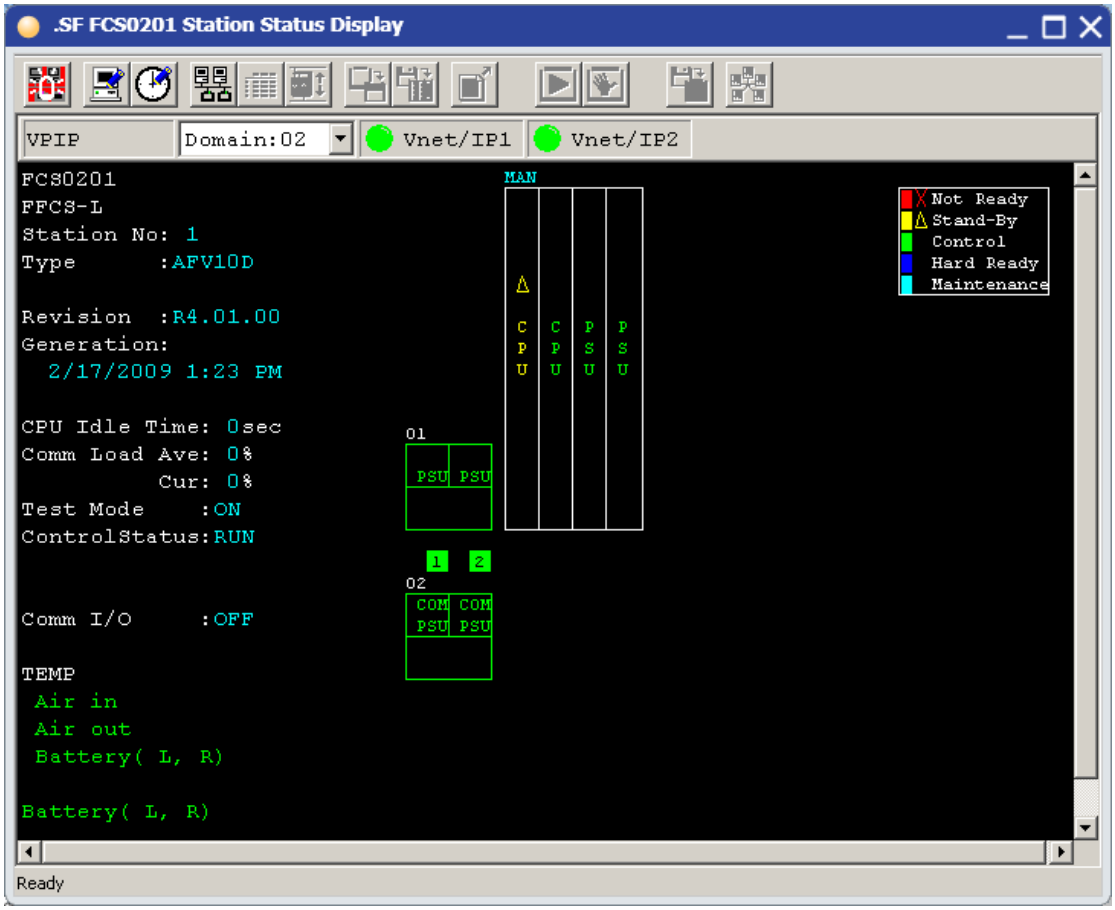


Figure: FFCS Status Display View (Without Expanded Node)

16.5. Elements of the FFCS Status Display View

The FFCS Status Display view consists of a toolbar and a status display area.

Toolbar in the FFCS Status Display View
By using the toolbar in the FFCS Status Display view, users can call other system maintenance windows, and start and shut down control stations.

Figure: Toolbar in the FFCS Status Display View

The buttons in the FFCS Status Display view toolbar are the same as that for a LFCS.

Status Display Area of the FFCS Status Display View

A list of control station status is displayed in the FFCS Status Display view.

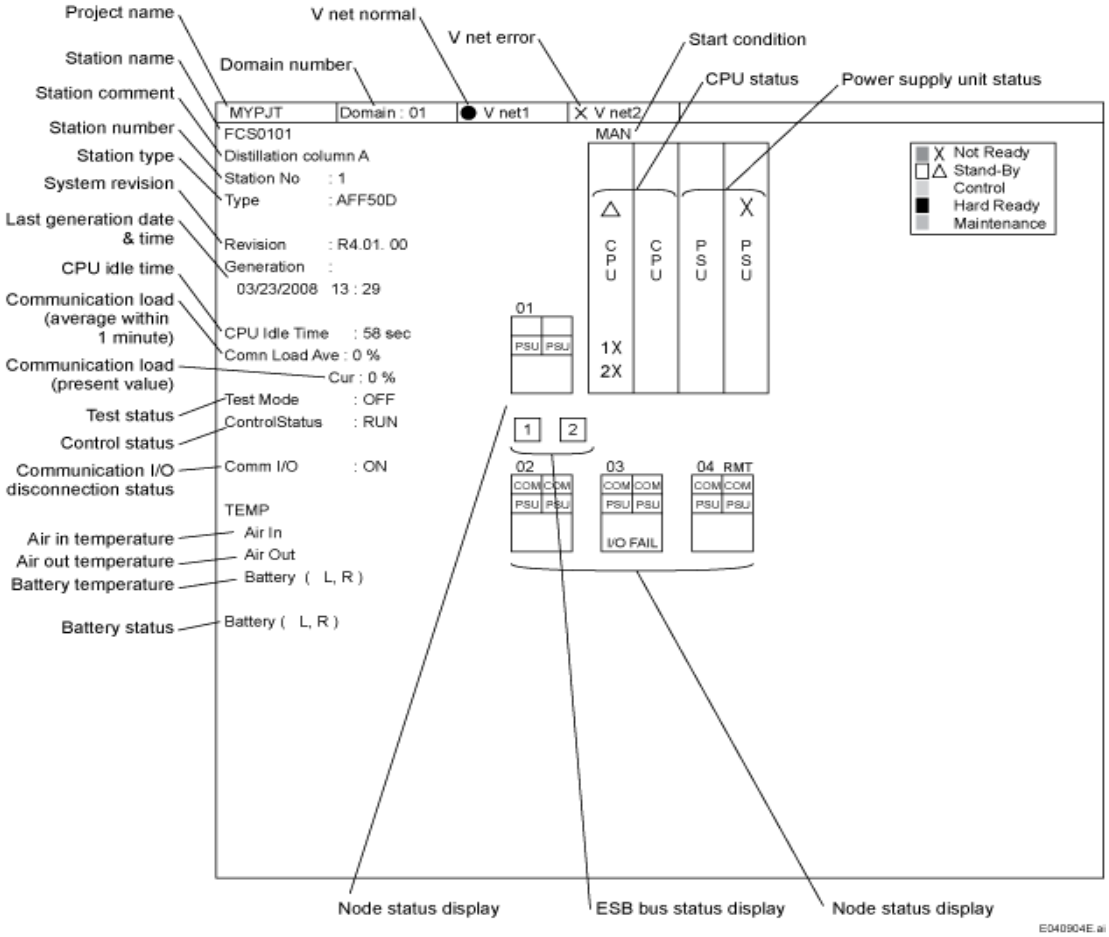


Figure: Status Display Area of the FFCS Status Display View

If the CPU, PSU and V net are not duplexed, the vacant sides are displayed as a blank

V net Status Display
The status of V net is displayed.
•Normal state: The normal state is displayed in green.
•Abnormal state: The abnormal state is displayed in red.

Station Information Display
The following information is displayed as the station information of the control station:
•Station type
Hardware model name of the control station

•Station revision
Revision of system software

•Generation date and time
The date and time when the last downloading was performed to the control station is displayed.

•CPU idle time
The CPU idle time per minute is displayed.

•Communication load
The V net communication load against CPU load of the field control station is displayed in percentage. The displayed values are current load and the moving average load against minute.

•Test status
The execution status of Test Function is displayed in cyan. [ON] is displayed while Test Function is in execution, and [OFF] is displayed while in regular operation.

•Control status
[RUN] is displayed while the control station is running, and [STOP] is displayed while the control station is stopped.

•Communication I/O disconnection status
Character string [OFF] is displayed while Communication I/O is being disconnected from the field during the execution of Test Function, and [ON] is displayed while Communication I/O is in regular operation.

Station Status Display
The following status is displayed as the station status of the control station: Colored character strings and symbols are used to indicate the statuses of the following items. The normal state is displayed in green, and the abnormal state is displayed in red. Symbols indicating abnormal conditions are displayed in the event of abnormalities.

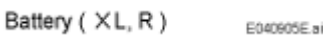


Figure: Symbol indicating abnormality (in the case of battery temperature abnormality)

•Air in temperature
•Air out temperature
•Battery temperature
•Battery status

Station Configuration Display
The following status is displayed as the station status of the control station:

•Start Condition
[AUT]: Restart
[MAN]: Initial cold Start
[TIM]: Restart after momentary power failure, and initial cold start after prolonged power failure

•CPU status
A colored character string and symbol are used to indicate the status of each CPU. The character string is displayed in green when normal, in red when abnormal, in yellow when in standby, in blue when hardware is ready (Hard Ready state), and in cyan during maintenance. Also, the character string [COPY] flashes in white while a program is being copied.
A colored bus number and symbol are used to indicate the status of each SB (ESB).

•Power Supply status
The status of each power supply unit is displayed in green when normal and in red when abnormal.

ESB Bus Status Display
The ESB bus number is displayed in green when normal and in red when abnormal.

Node Status Display
The following status is displayed as the node configuration of the control station: When the node configuration display area is double-clicked, the Node Status Display dialog box is called.

•Node number

•Node Connection
[RMT] is displayed if the connection form of the node is remote. Nothing is displayed if the connection form of the node is local.

•Communication status
The communication status of each node is displayed by the character string [COM]. [COM] is displayed in green for normal communication state and in red for abnormal communication state. Nothing is displayed for node 1.

•Power supply status
The power supply status of each node is displayed by the character string [PSU]. [PSU] is displayed in green for normal power supply state and in red for abnormal power supply state.

•I/O Module status
The abnormal state of the I/O module is displayed. If the I/O module is abnormal, [I/O FAIL] is displayed in red. If it is normal, nothing is displayed.

16.6. FFCS Node Status Display Dialog Box

The Node Status Display dialog box is the dialog box that displays the status of each node of the FFCS in detail. A display example of the Node Status Display dialog box is shown below.

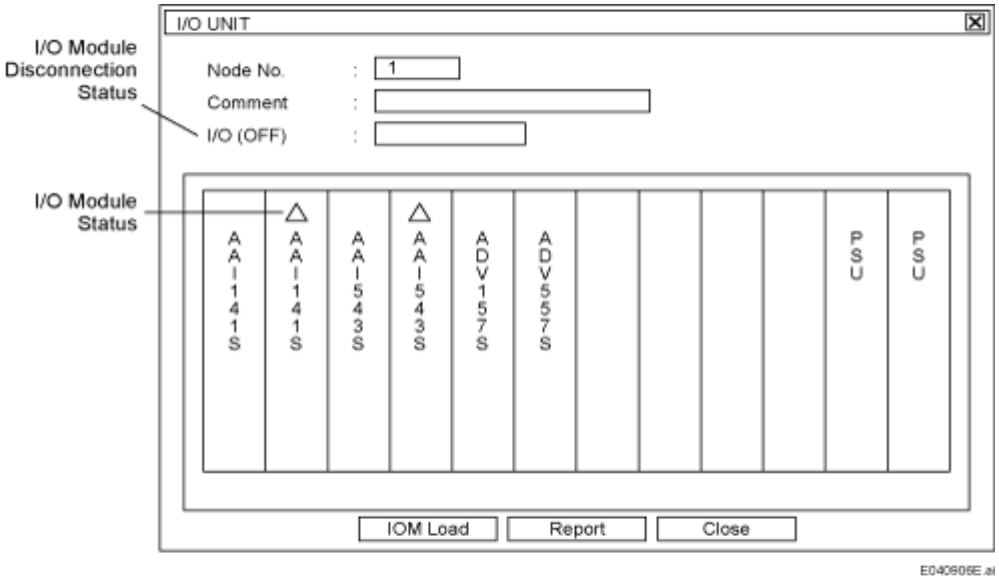


Figure: FFCS Node Status Display Dialog Box (for the I/O Module Section of the FCU)

If an ESB bus coupler module (EC401) is inserted into slot 7 and/or 8 of the I/O module section of the FCU, the slot(s) look like vacant slots in status display

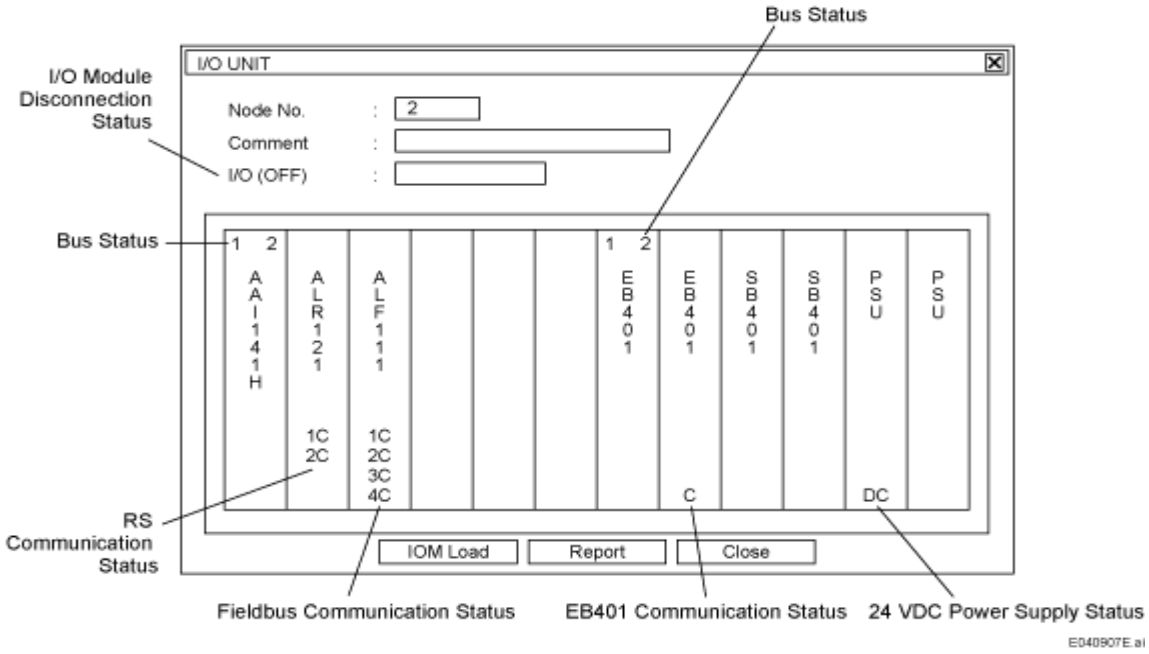


Figure: FFCS Node Status Display Dialog Box (for a Local Node)

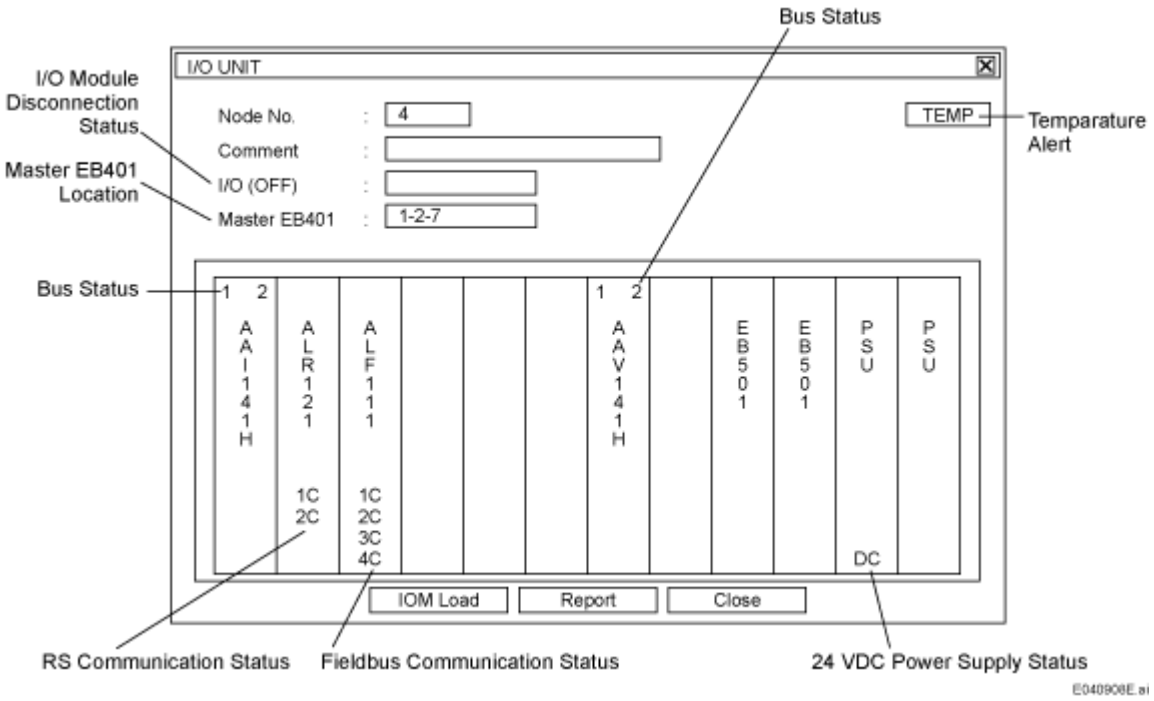


Figure: FFCS Node Status Display Dialog Box (for a Remote Node)

Node Status Display
The following items are displayed in the Node Status Display dialog box:

Node Status
The I/O module disconnection status, node communication status, node power supply status and other information are displayed.

•Master EB401 Location (remote node only)
This is displayed in the format of “System Number-Node Number-Slot Number.”

•Temperature Alert (remote node only)
The temperature status of each node is displayed by [TEMP]. [TEMP] is displayed in green for normal temperature state and in red for abnormal temperature state.

•I/O Module Disconnection Status
The status of each I/O module while executing Test Function is displayed. The slot number of the I/O module disconnected from the field while executing Test Function is displayed. The frame of the slot containing the disconnected I/O module is displayed in cyan. Nothing is displayed if no I/O module is disconnected.

•Node Power Supply Status
The power supply status of each node is displayed by the character string [PSU]. [PSU] is displayed in green for normal power supply state and in red for abnormal power supply state.

•24 VDC Power Supply Status
If the supply status of the power is abnormal, [DC] is displayed in red.

•SB401 Status (local node only)
The status of each SB401 module is displayed by its colored symbol. It is displayed in green when normal and in red when abnormal.

•EB501 Status (remote node only)
The status of each EB501 module is displayed by its colored symbol. It is displayed in green when normal and in red when abnormal.

•EB401 Status (local node only)
The status of each EB401 module is displayed by its colored symbol. It is displayed in green when normal and in red when abnormal.

•EB401 Communication Status
If any one of the nodes under the EB401 is abnormal, it is determined as a communication error. Nothing is displayed when normal, but [C] is displayed in red when abnormal.

•Bus Status
The status of each ESB bus connected to the EB401 is displayed by a color of the bus's system number. Nothing is displayed when normal, but the bus status is displayed in red when abnormal

•I/O Module Status
The status of each I/O module is displayed by its colored symbol together with the name of the I/O module. It is displayed in green when normal, in red when abnormal, and in yellow when I/O modules are duplexed or in the standby state. The communication module name is displayed in red when a communication error has occurred.
"-" included in the I/O module name is not displayed.
As for the ALF111 module, if its communication with a fieldbus device becomes abnormal, the status of the port corresponding to the segment to which that field bus is being connected is indicated by nc (n is a port number), and the ALF111 module is displayed in red.
The abnormal state in this case means that a fieldbus device is not connected to the field bus, or the power is off.
As for the ALR111, ALR121 and ALE111 modules, if the communication of any of these modules with its subsystem becomes abnormal, the status of the port to which that subsystem is being connected is indicated by nc (n is a port number), and the module is displayed in red.

IOM Load
The IOM Load function downloads the definition of an I/O module defined in IOM Builder to the corresponding I/O module (IOM).
Select an I/O module to which you want to download the definition, and then click the [IOM Load] button. When this button is clicked, a dialog box appears to confirm operation.
A message is displayed during a download operation to check the progress.
Note that you cannot operate the FFCS Status Display view during a download operation.
IOM Load is enabled on an HIS where IOM Builder is installed and the corresponding project is set as the current project.

Report
The Report function calls the FCS Report dialog box that displays the station information. Select an I/O module whose station information you want to display, and then click the [Report] button. The contents of the FCS Report dialog box can be printed or output to a file. However, the [Report] button cannot be used while Test Function is being started.

17. HIS SETUP WINDOW

The HIS Setup window is used for displaying the current station's information or changing operation settings.

- **Calling from System Status Overview**
  Click the following button on the Toolbar of the System Status Overview.


E040334E.ai

- **Calling from Browser Bar**

1.Click [NAME] label on Browser Bar, so as to display the Name Input toolbox.

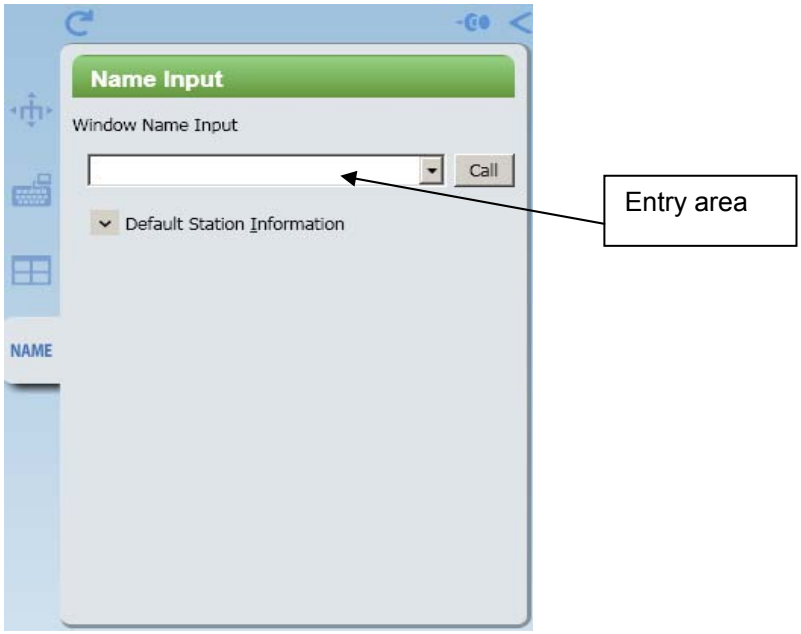


Figure: Name Input Tool Box

2.Enter the following to the entry area.
.SH
3.Click [Call] button.

- **Calling from Operation Keyboard**

1.Click the following button on the operation keyboard so as to display the Name Input toolbox.

E040336E.ai

2.Enter the following to the entry area.
.SH

3.Click [Call] button.

17.1. Station Tab

Displays the project name, station information and Operating System information.

The figure below shows an example of a station tab.

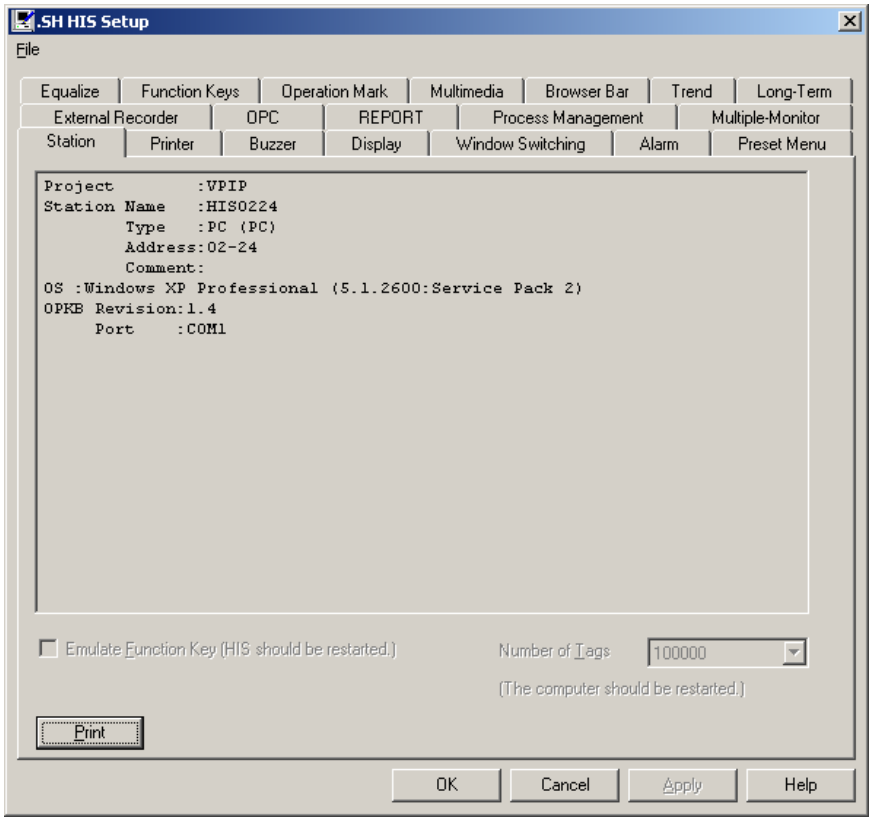


Figure: Station Tab in HIS Setup Window

- **Emulate Function Key**

Whether to use the shortcut keys to emulate the function keys of the HIS operation keyboard needs to be decided. By default, this option is not checked. In order to use shortcut keys, the functions must be assigned to the corresponding function keys on the HIS operation keyboard.
When changing this option, it is necessary to restart HIS console to enable the new settings. To restart the HIS console, log-out Windows and logon again is required.

➢ **Shortcut Keys to Execute Functions of Function Keys**

The functions assigned to function keys 1 to 20 of the operation keyboard can be executed via shortcut key actions.

The shortcut key actions (on the standard PC keyboard) and the corresponding functions are listed below:
•Ctrl+F1: Function assigned to function key 1
•Ctrl+F2: Function assigned to function key 2
•Ctrl+F3: Function assigned to function key 3
•Ctrl+F4: Function assigned to function key 4
•Ctrl+F5: Function assigned to function key 5
•Ctrl+F6: Function assigned to function key 6
•Ctrl+F7: Function assigned to function key 7
•Ctrl+F8: Function assigned to function key 8
•Ctrl+F9: Function assigned to function key 9
•Ctrl+F10: Function assigned to function key 10
•Ctrl+Shift+F1: Function assigned to function key 11
•Ctrl+Shift+F2: Function assigned to function key 12
•Ctrl+Shift+F3: Function assigned to function key 13
•Ctrl+Shift+F4: Function assigned to function key 14
•Ctrl+Shift+F5: Function assigned to function key 15
•Ctrl+Shift+F6: Function assigned to function key 16
•Ctrl+Shift+F7: Function assigned to function key 17
•Ctrl+Shift+F8: Function assigned to function key 18
•Ctrl+Shift+F9: Function assigned to function key 19
•Ctrl+Shift+F10: Function assigned to function key 20

➢ **Shortcut Keys Reserved for Specific Functions**

Besides emulating the function keys, there are three kinds of shortcut key actions to execute specific functions. These shortcut key actions are always available without any setting.

The shortcut key actions and the corresponding functions are as follows:
•Ctrl+Alt+F11: Switches the isolation mode of the HIS
•Ctrl+Alt+F12: Displays an auxiliary menu
•Ctrl+Alt+Backspace: Displays the User-In dialog box

Cautions On Using Shortcut Keys

The shortcut key actions of HIS may conflict with those of other general-purpose applications. Conflict in shortcut keys differs depending on the applications installed in the computer. Examples of possible conflicts in shortcut keys are shown below:
•The function assigned to the shortcut key of the HIS and the function assigned to the shortcut key of other application are both executed simultaneously.
•Either of the functions is executed.
•Neither of the functions is executed.
If the conflicts occur, do not use (disable) the shortcut keys or reconfigure the system so as to avoid the conflicts.

• **Number of Tag**

The user can select the number of user-defined tags to be monitored according to the scale of the project. (*1)
When the expansion package for operation and monitoring is applied, one million or 500 thousands can be chosen as the number of tags to be handled.
If a user-defined tag cannot be registered because the maximum number of tags has been exceeded, a system alarm message occurs.
When this option is changed, the change will become valid after restarting the PC.

*1: Number of tags cannot be select if CENTUM VP Entry Class is used.

- **Print**

The following contents may be printed out from the Station tab.
•Function key assignment
The numbers, assignments and the LED settings of the function keys
•Operation Mark
Number, label name, and colors
•Trend display assignment
Trend View names, assigned pens and high-low limits
•Graphic view with control attributes
Graphic view name and the tag name assigned in the drawing
•Multimedia
Number, number of play, target station and file name
•External recorder settings
When the recorder output package is installed

17.2. Printer Tab

Sets printing message and window messages output settings.
When there is a printer error, the printer can be switched directly using the HIS without starting up the builders.

The figure below shows an example of a Printer tab.

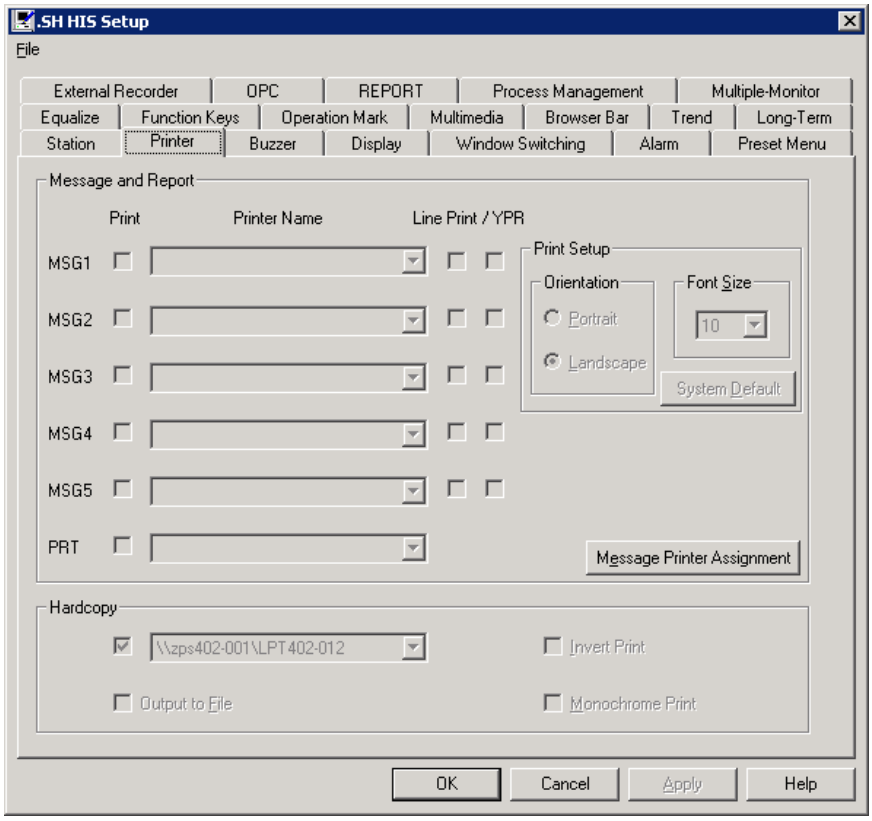


Figure: Printer Tab in HIS Setup Window

- **Message and Report**

To print messages and reports, check [Print] check box for each message assignment and select the output printer from the pull-down menu of [Printer Name]. The print orientation and font size can also be selected.

•MSG1 to 5
The type of message to be assigned to MSG1 to 5 is pre-defined in the HIS Constants Builder. The printer that the assigned message is printed to is selected in the Printer tab.

•PRT
Select the printer to which the alarm message or process report are output.

•Line Print
Select this for printing one message at a time on a serial printer. With this unselected, data is printed by the page.
This function is displayed with the line output printer package installed in the HIS.

•[YPR]
YPR120 (a Yokogawa brand dot-matrix impact printer) should be chosen as the YPR printer for printing the messages. If YPR is not defined, the message cannot be printed out with two colors of black and red. (*1)
This YPR configuration is effective only when the Line Printer Output Package is installed to the HIS.
*1:If a dot matrix impact printer other than YPR120 is used, the red color messages may not be properly printed out.

•Print Orientation
Select the orientation of the paper. Note that this setting will be invalid with 1 line print selected. With 1 line print selected, the only valid print orientation is [Landscape].

•Font Size
Select the font size to be printed on paper. The number of messages that will be printed on a single sheet of paper depends on the font size that is selected here. Note that this setting will be invalid with 1 line print selected.
The font for printout is the font selected on Display tab.

•System Default
This is used when resetting the print orientation and font size back to the default settings.

•Message Printer Assignment
The messages defined in MSG1 to 5 are displayed.
The type of message to be printed cannot be changed here. Change the message type assignment in the HIS Constants Builder.

• Hardcopy
To print the screen image, check [Print] check box and select the output printer from the pull-down menu of [Printer Name].
To print with black and white reversed or monochrome printing, check the items respectively.

•Invert
Prints the screen image to a color printer with only the black and white colors inverted. Other colors (other than black or white) are printed out as they are.

•Monochrome print
The screen image is printed out in black and white.
Note that the specification of monochrome print may be invalid depending on the type of printer (monochrome print is disabled by a printer driver not supporting the specification of monochrome print in an application). In this case, set up a printer as follows:

•Output file
Check this to output the screen image to a file.
If [Output file] is checked, a bitmap file (.bmp) is created and stored.
This file can be called up and printed out from the image window.

If printer is not registered, [Print] check box cannot be checked. Perform the printer registration in the Printer Setup function of Windows.

17.3. Buzzer Tab

With the HIS, a sound can be generated to inform the operator that a message has occurred or there is an operation error. Also, the tone and type of sound can be set so that the type of message generated can be distinguished by the sound.
The settings for these sounds are done in the buzzer tab.

The figure below shows an example of a Buzzer tab.

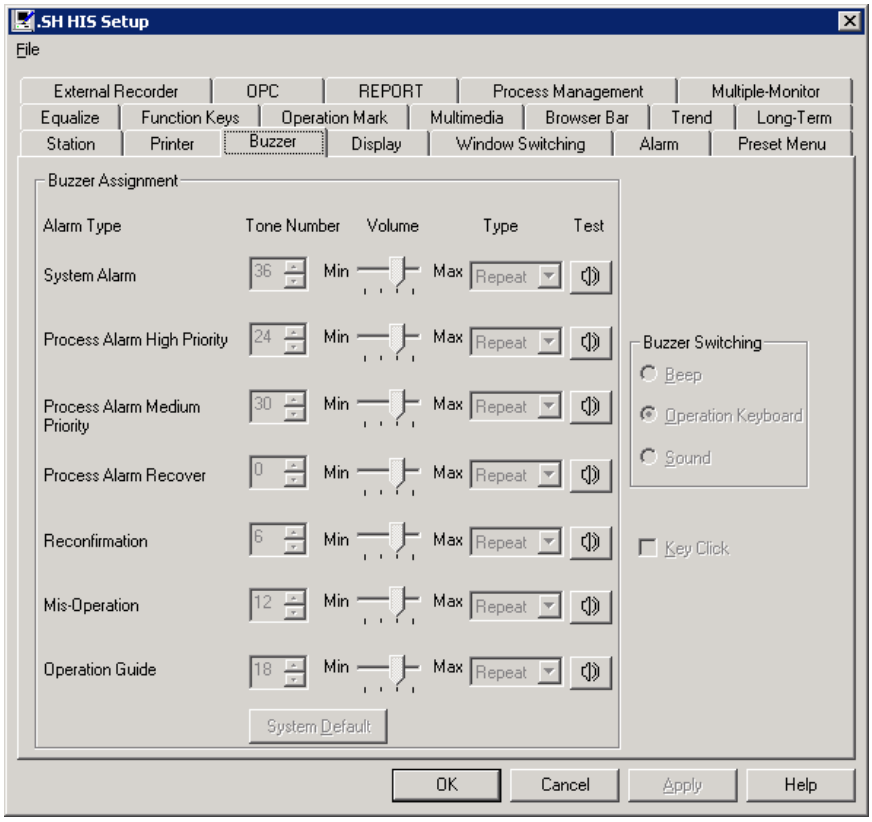


Figure: Buzzer Tab in HIS Setup Window

- **Buzzer Assignment**

The tone and volume of the sound generated when an alarm occurs or during an operation error can be set for each type of alarm.

•Tone number
The tone output is designated by a number. This is valid when [Operation Keyboard] is selected at [Buzzer Switching].

The tone numbers of different alarms can be set as follows:
System Alarm: 36 to 39
Process Alarm High Priority: 24 to 27
Process Alarm Medium Priority: 30 to 33
Process Alarm Recover: 0 to 3
Reconfirmation: 6 to 9
Mis-Operation: 12 to 15
Operation Guide: 18 to 21

•Volume
This is used when adjusting the volume of the buzzer sound output. No buzzer sound will be output if the volume is minimized. When [Beep] or [Sound] is selected at [Buzzer Switching], tuning the volume can only be set the buzzer either on or off.

•Type
Select either repeat sound or notification sound.

•Test
This is used to test what kind of sound is output. Click the test button again to stop the test.

•System default
This is used when returning the tone number to the default setting.

- **Buzzer Switching**

Select the device to output the buzzer. This is fixed to the operation keyboard on the console type HIS.

•Beep
The buzzer sound is generated from PC.

•Operation keyboard
The buzzer sound is generated from the keyboard.

•Sound
The buzzer sound is generated from the sound board.

- **Key Click**

Sets whether key/mouse click sound is active or not when the operation keyboard or the mouse is operated.

17.4. Display Tab

Defines the settings regarding the operation and monitoring windows.

The figure below shows an example of the Display tab.

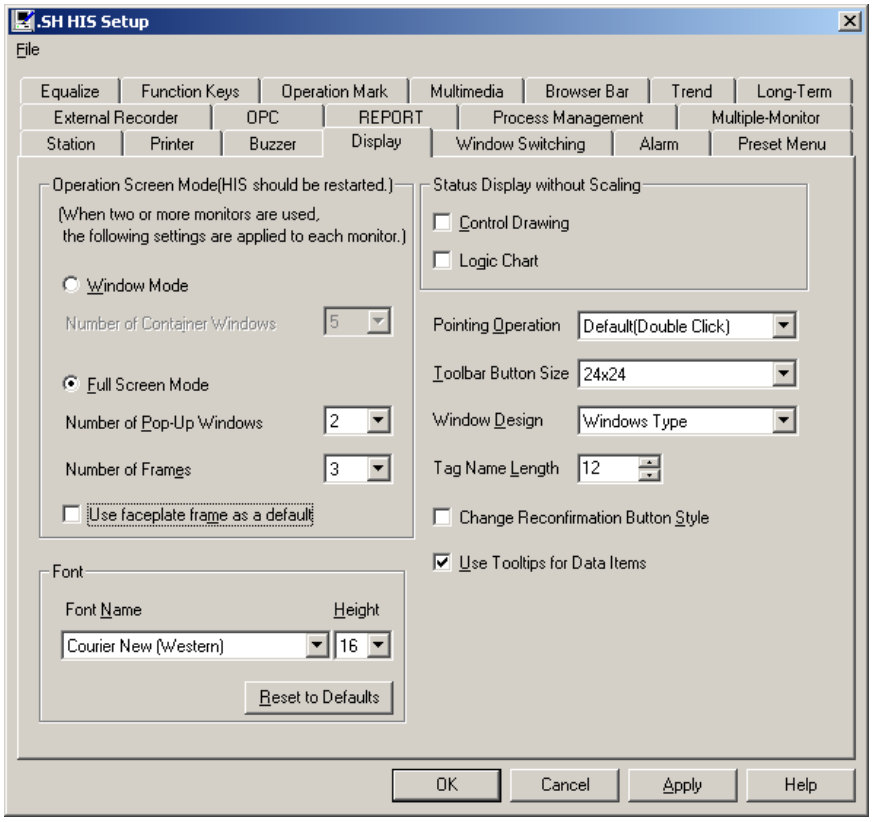


Figure: Display Tab in HIS Setup Window

- **Operation Screen Mode**

Sets the display mode of the operation and monitoring windows.
When changing the operation screen mode, it is necessary to restart HIS console to enable the new settings. To restart the HIS console, log-out Windows and logon again is required.

Two operation screen modes are provided: full-screen mode and window mode.

Full-Screen Mode
In this mode, the operation and monitoring windows are displayed over the entire screen.

Window Mode
In this mode, all operation and monitoring windows are displayed in the same cascade view format as the Windows.

•[Use faceplate frame as a default]
On the main window, the Graphic view, Trend view and Process Alarm view are displayed. Clicking a primitive object that assigned with a tag name can open the corresponding faceplate. The faceplate can be displayed at the right side of the main window or displayed as a pop-up window. The display position is selectable. When the check box is checked, the faceplate will be displayed at the right side of the main window.

- **Font**

Select the font and its height for displays in the windows. The fonts displayed here are TrueType fonts of fixed width.
Clicking [System Default] button may return to system default settings.
The font settings are applied to the operation and monitoring windows, excluding the Graphic views (for each of which the user designates a font with builders) and dialog boxes.
Also, when using the operation and monitoring window in a resolution other than the standard 1280x1024, it is necessary to change the font size to match the display.

The recommended font size with respect to each display resolution is indicated below.

Screen Resolution	Recommended font size
1280 x 1024	16 points
1600 x 1200	20 points

When using the wide monitor, the following font sizes are recommended for the following typical screen resolutions.

Screen Resolution	Recommended font size
1280 x 800	14 Points
1440 x 900	14 Points
1680 x 1050	16 Points
1920 x 1200	20 Points

If a font size larger than the recommended is selected, characters may drop off and all information may not be displayed. Note that some windows including the instrument faceplates have a fixed font size.

- **Status Display without Scaling**

Scaling for control drawing views or logic chart views can be enabled or disabled. When the option “Status Display without Scaling” is checked, the scaling is disabled.

Pointing Operation
Select the pointing operation method for using the Operation and Monitoring to select a touch target and operate a window.

•Default (Double Click)
The pointing operation consists of single- and double-clicking.
•Single Click on the Graphic Touch Target
The pointing operation consists of single- and double-clicking. Note that touch targets in the Graphic views can only be single-clicked.

•Single Click
The pointing operation consists of only single-clicking. Note that this does not apply to some of the operation and monitoring windows including Browser bar.

- **Toolbar Button Size**

Select the size of the toolbar buttons.
The contents set here will be enabled in the toolbars of all windows in HIS. Note that some windows including Browser bar and the historical message report window have buttons of fixed size in their toolbars.

- **Window Design**

The designs of the Operator Guide view, Process Alarm view, System Alarm view, System Status Overview, and instrument faceplates can be changed by selecting their background color, character color, etc.
•Windows Type (default)
This is most frequently used for Windows general applications.
•Traditional
This black-based design has been the typical design of CENTUM series products.
•No specification
The current color settings are applied to the background and characters.

- **Tag Name Length**

Select the number of display digits for a name displayed in the operation and monitoring window.
The contents set here will be valid in all the operation and monitoring windows including the instrument faceplates and the Process Alarm view, with the exceptions of the Process Report view, etc.

- **Change Style of Reconfirmation Buttons**

The style of reconfirmation buttons can be selected between [X/√] and [X/].
When the check box is checked, [X/√] will be applied as the button style. By default, this option is not checked.

- **Show Tooltips for Data Items**

On the Tuning view, whether to pop up the tips of the data items in the parameter area can be selected.
Checking this option, the tips of the data items will popup. By default, this option is checked.

When the cursor is moved near a data item, the tip for the item will be shown. The tips of the data items may include the names of the defined parameters and variables as well as the attached descriptions.

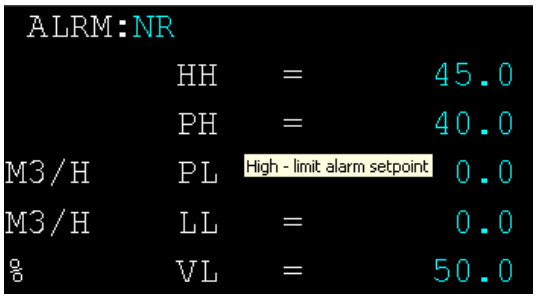


Figure: Show Tips of Data Items

17.5. Window Switching Tab

This tab is for the settings regarding the types and actions of the windows called from System Message Banner and the windows popped out by the occurred alarm or event messages.

The figure below shows an example of a Window Switching tab.

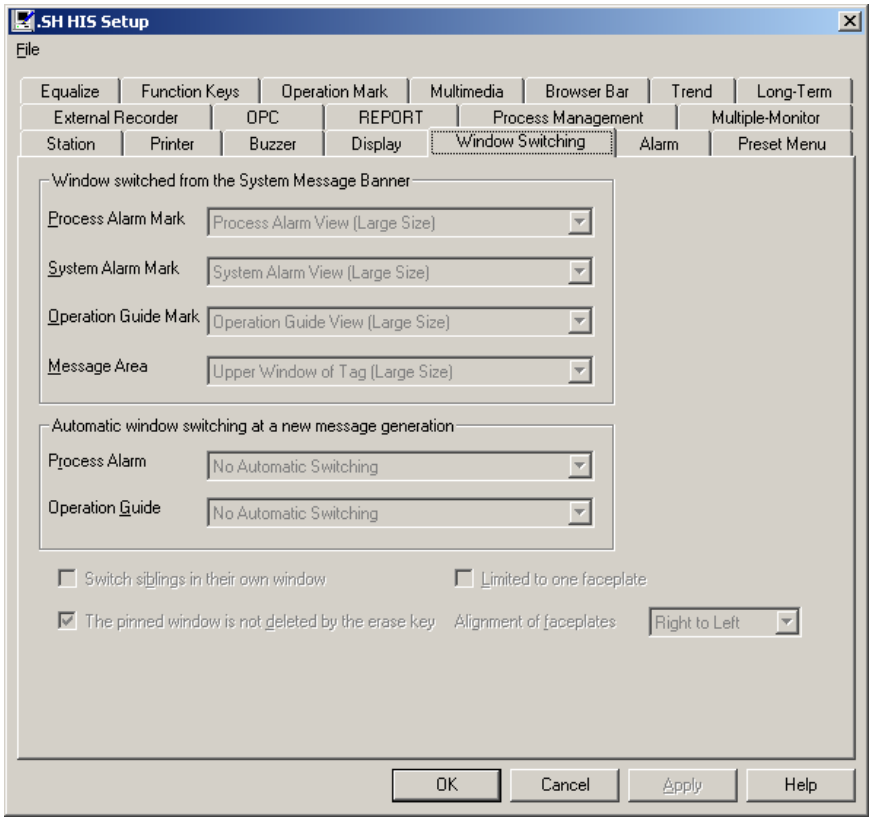


Figure: Window Switching Tab in HIS Setup Window

- **Calling Windows from System Message Banner**

When calling windows from System Message Banner, to call an alarm window or message window as well as the window size can be defined. When choosing a window not in full-size, the window can be displayed as an auxiliary window in full-screen mode.

•[Process Alarm Mark], [System Alarm Mark], [Operation Guide Mark]
When calling Process Alarm View, System Alarm View or Operator Guide View, the size can be selected from a pull-down menu.

•[Messages Area]
When clicking a message displayed in the message area on System Message Banner, a window will be displayed. The type and size of the window can be selected from a pull-down menu.

- **Windows Automatically Opened by New Messages**

When a new process alarm or operator guide message occurs, the related window can be automatically opened according to the selection in the pull-down menu.

- **Switch Siblings in their Own Window**

Pressing the left or right hierarchy button on the operation menu calls up a hierarchy window. Checking this check box replaces the contents of the active window with those of a hierarchy window without calling up a new window. Selecting this function changes the sibling window call-up operation for all windows with the sibling window call-up function.
By default, this option is not checked.

- **The Pinned Window is Not Deleted by the Erase Key**

Check this check box to prevent the closing of a pinned window by operating the clear-all button (or the clear-all key).
By default, this option is not checked.

- **Limited to one faceplate**

This is an option to allow only one faceplate to be displayed on the screen. When open a new faceplate, the new faceplate is displayed in the same position to replace the old one. By default, this option is not checked.
By default, this option is not checked.

- **Alignment of faceplates**

The display alignment of the faceplates can be specified. However, this setting is valid only for the console-type HIS that supports simultaneous manipulation of the eight control loops. Alignment of faceplates has the following options:

•Right to Left (Default)
The opened faceplates are aligned from right side of the screen regardless the window types (active windows).

•Left to Right
The opened faceplates are aligned from left side of the screen regardless the window types (active windows).

17.6. Alarm Tab

This tab is for the settings regarding the alarm display and acknowledgement actions.

The figure below shows an example of the Alarm tab.

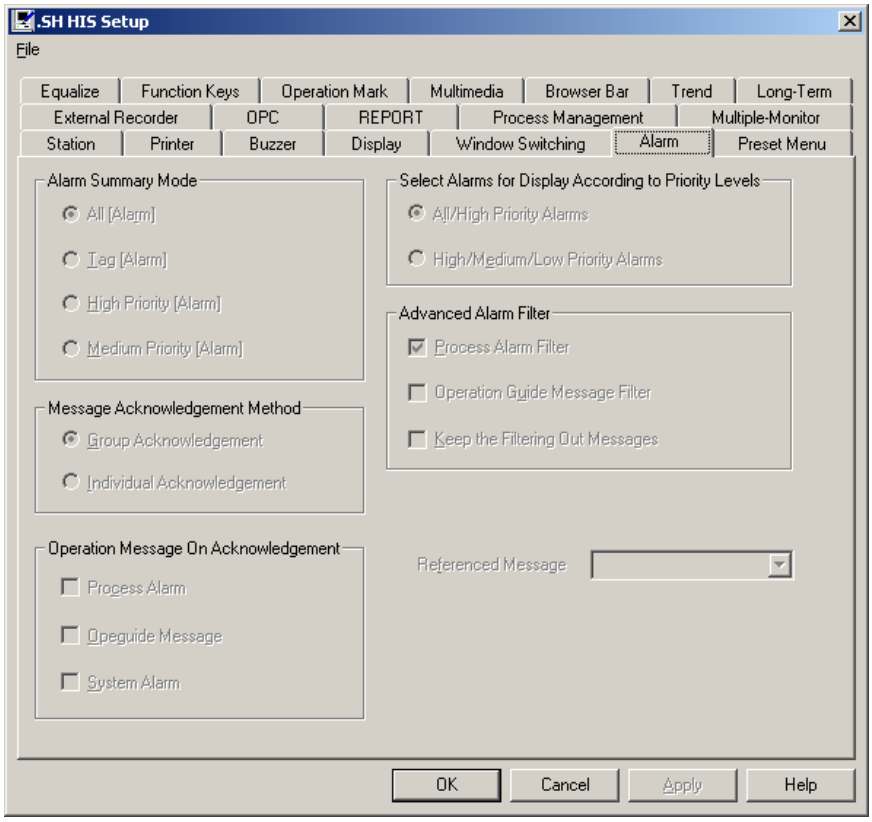


Figure: Alarm Tab in HIS Setup Window

- **Alarm Summary Mode**

Among the process alarms activated, only the process alarms in the selected range are displayed in the operation and monitoring window.

•All alarms
All process alarms activated are displayed.

•Tag alarm
If multiple process alarms are activated for a single function block, the highest priority alarm is displayed.

•High Priority alarm
Among all process alarms activated, only emergency alarms are displayed.

•Medium Priority alarm
Among all process alarms activated, only emergency and high priority alarms are displayed.

- **Message Acknowledgement Method**

Select the alarm message acknowledgment method. The method selected here is valid for operator guide messages, process alarm messages and system alarm messages.
In the global acknowledgment mode, the generated messages are acknowledged globally for each message type.
In the individual acknowledgment mode, the generated messages are individually selected and then acknowledged.

- **Operation Message on Acknowledgement**

If this option is checked, when acknowledging a process alarm message, an operator guide message or a system alarm message, the acknowledging operation itself is recorded and sent to historical message report window as an operation message.

- **Select Alarm for Display According to Alarm Priority Levels**

There are following two options can be chosen.

•ALL/High Priority Alarms

If this option is checked, clicking the button on the process alarm view toolbar can switch from displaying all alarms to only displaying high priority alarms.

•High/Medium/Low Priority Alarms

If this option is checked, clicking the button on the process alarm view toolbar can switch among displaying high/medium/low priority alarms respectively.

- **Advanced Alarm Filtering (Optional)**

After installing Advanced Alarm Filter package, this option becomes available.

- **Referenced Message**

The HIS may display the alarms occurred after HIS starts up. Furthermore, the HIS may copy the history of the message from other operation and monitoring consoles so that the alarm messages, the alarm messages in the past may be displayed on the Process Alarm view. Thus, specify the HIS name, the source of the message history to be copied, to this field.

17.7. Preset Menu Tab

On HIS, the frequently used tasks can be assigned beforehand; the tasks can be quickly launched from the Browser Bar. Up to 32 tasks can be assigned.
The tasks to be quickly launched need to be assigned on Preset Menu tab.

The figure below shows an example of the Preset Menu tab.

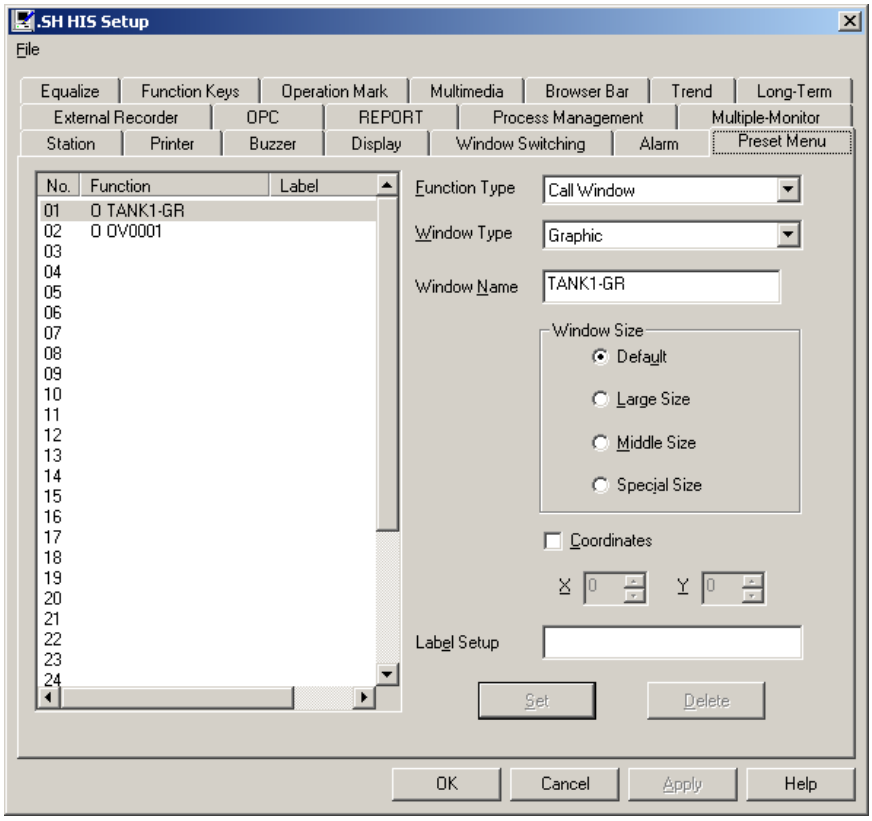


Figure: Preset Menu Tab in HIS Setup Window

The same functions can be set on the Preset menu as on the function keys.

- **Label Setup**

Enter up to 64 single-byte characters for a string to be displayed on the preset menu. With this setup omitted, a string assigned for [Function] is displayed.

- **Menu Separator**

Select [Others] for [Function Type] and then specify “=” for “Function String” to display a menu separator. The menu separator is included in the number of the setup items.

17.8. Equalize Tab

Runs equalization or sets the equalization related settings.
Equalization is a process to equalize the items defined by builders and the database in the current station. The creation dates of the database in the control station or builders and of the database of the current station are compared at the time HIS is activated. If there is an inconsistency, the equalization request dialog is displayed in the System Message banner. In this case, perform the equalization in the Equalization tab.

The figure below shows an example of the Equalization tab.

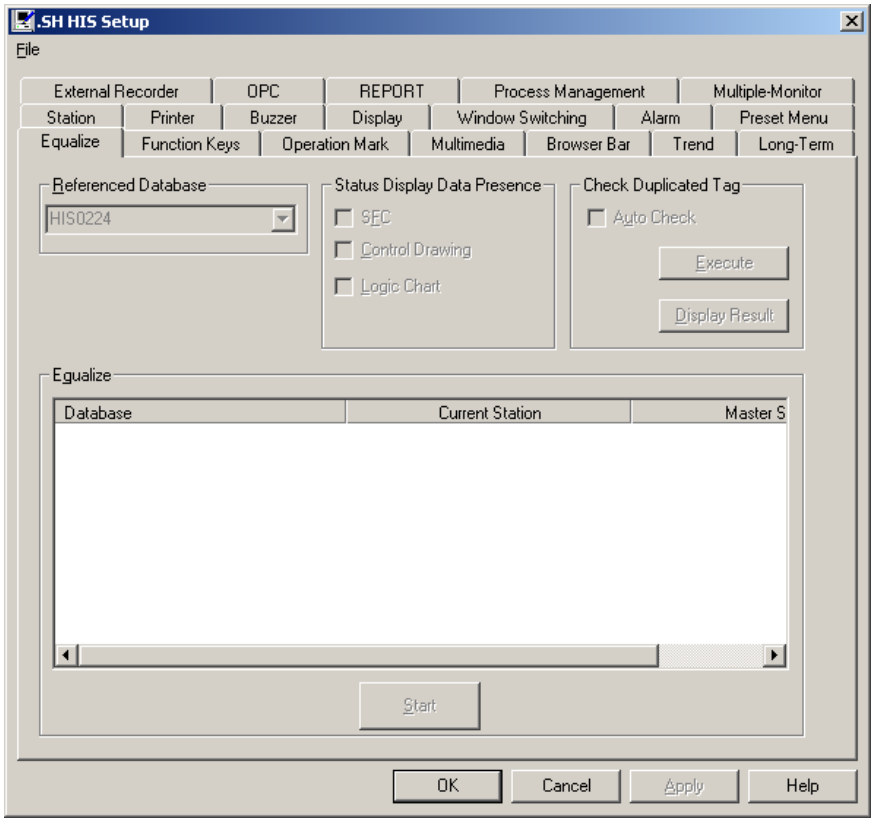


Figure: Equalize Tab in HIS Setup Window

- **Referenced Database**

When performing equalization, the station name of the master database located can be selected from the pull-down menu. The station names listed on the pull-down menu are the station names defined on the builder. If the defined stations are not yet downloaded, the station names will not be shown on the pull-down menu.

- **Status Display Data Reference**

The item displayed here can specify whether to perform equalization for each item.
Place a check mark by the item that is to be equalized.

- **Check Duplicated Tag**

This is used to check for any duplication in all of the FCS tag lists to be operated and monitored on HISs, and in operation and monitoring window names. The check results are output in a text file for display on HISs. With the Multiple Project Connection Package installed, function blocks in all projects will be checked.

•Auto Check
Any duplicated tags are automatically checked for upon startup of the HIS console or upon loading of tag lists.

•Execute
Click this to manually check for any duplicated tags. The HIS Setup window cannot be operated during the tag duplication check. Upon successful completion of the check, the results are automatically displayed.

•Display Result
Click this to display the results of the previous check without performing any further check.

- **Equalize**

When the database in the current station and the master station do not match, the creation dates of the database in the current station and the master station are displayed for each database file.

•Start Button
Equalization is executed with this button.
Upon completion of equalization, the equalization list displays items completed successfully in green and those completed unsuccessfully in red.

17.9. Function Keys Tab

The functions assigned to the functions keys on the Function Key Assignment Builder can be temporarily changed on HIS. Changing the assignment can be performed on Function Keys tab.

The figure below shows an example of the Function Keys tab.

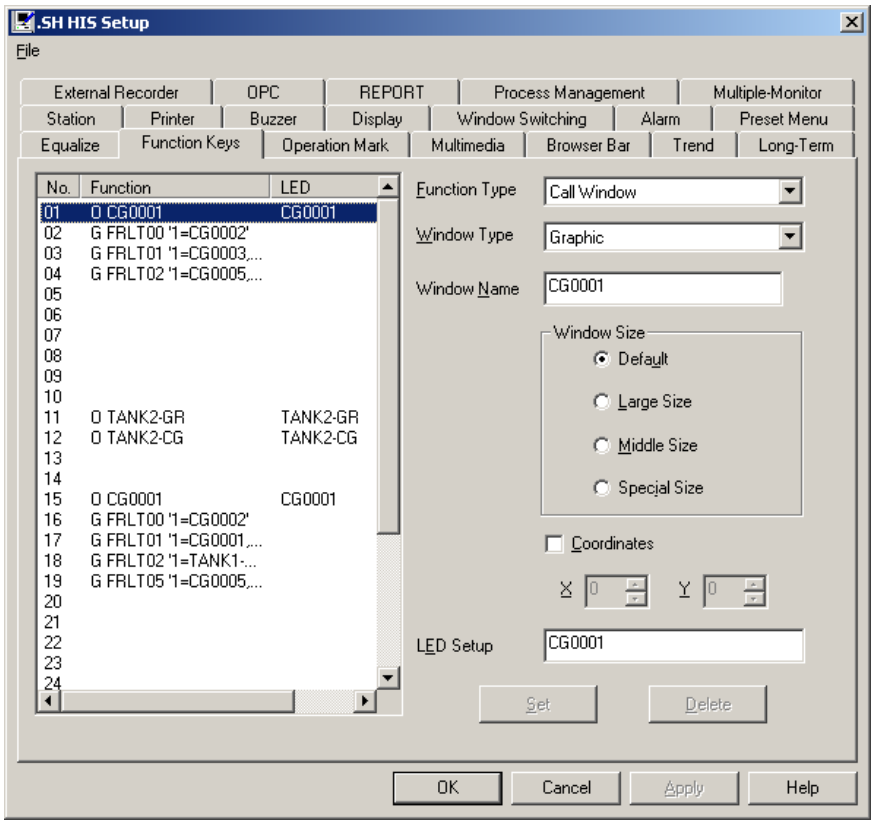


Figure: Function Keys Tab HIS Setup Window

- **Precautions when Using the Function Keys Tab**

A security code can be set for each function key in the Function Key tab using the builders. Function keys that the user has no authority to change cannot be defined in this tab.
Also, function key assignments can be defined in both the Function Key Assignment Builder and the HIS Setup window. When both are used to define the same function key, the contents of the definition downloaded later takes effect.

17.10. Operation Mark Tab

The labels and colors assigned to the operation marks on the Operation Mark Builder can be temporarily changed on HIS. Changing the assignment can be performed on Operation Mark tab.

The figure below shows an example of the Operation Mark tab.

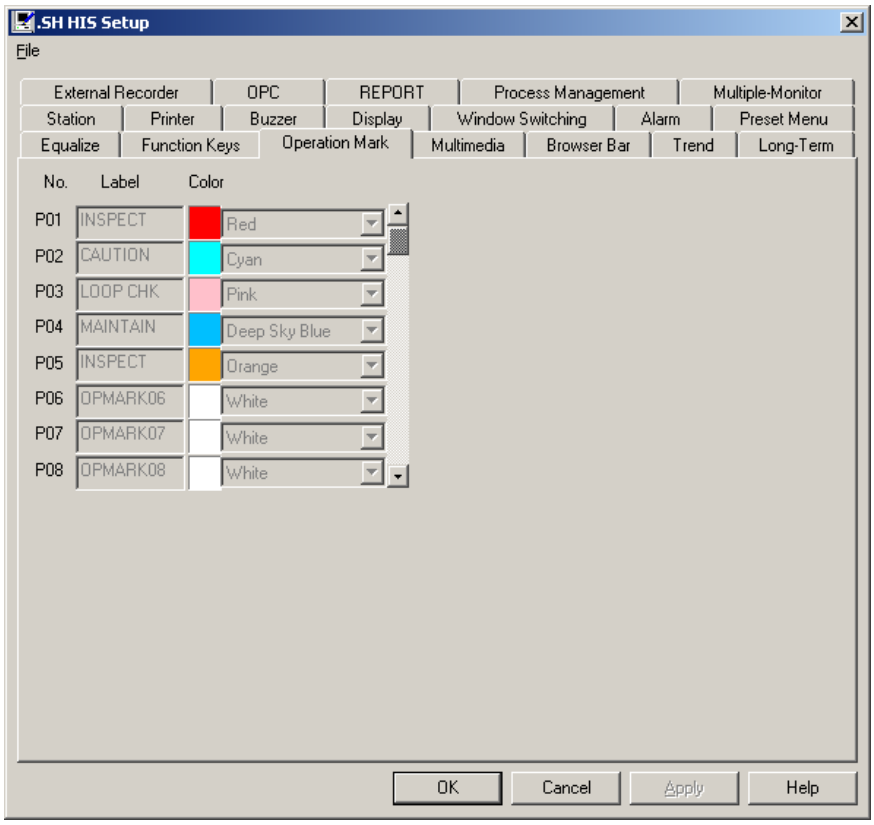


Figure: Operation Mark Tab in HIS Setup Window

- **Precautions when Using the Operation Mark Tab**

Operation marks can be defined in both the Operation Mark Builder and the HIS Setup window. When both are used to define the same operation mark, the contents of the definition downloaded later takes effect.

- **Label**

Enter the label (text) that will be displayed in the operation mark.
Up to eight alphanumeric characters may be used.

- **Color**

Select the display color of the label.

17.11. MultimediaTab

Define the use of the Multimedia Function on the Multimedia tab. When the specified station sends a request for the use of the Multimedia, voice messages and videos stored in the corresponding files are played.

The figure below shows an example of the Multimedia tab.

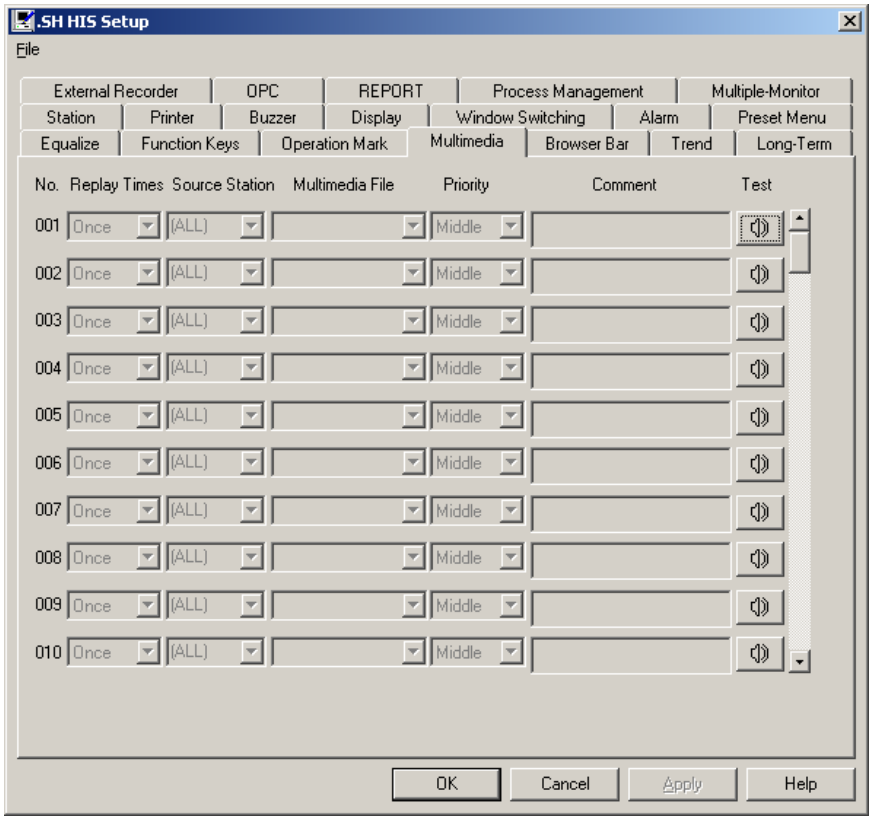


Figure: Multimedia Tab in HIS Setup Window

The applicable multimedia file formats are as follows:
Sound only: Sound (.wav), MIDI (.mid, .rmi)
Video and sound: AVI (.avi) , MPEG (.mpg)
A multimedia file cannot be created on HIS; to create the file, use a commercially available sound recorder or a special software program.
Internet Explorer 4.01 or later is required for the file format MPEG.

- **Replay Times**

Select the number of times to play sound messages or videos. When [Infinity] is selected, always assign a [Stop] to a separate function key. [Stop] can be assigned in the Function Keys tab.

- **Source Station**

Select the name of the control station that outputs the sound message or video.

- **Multimedia File**

The combo box for a multimedia file displays a file subordinate to the directory (\HIS\Media\User) where the system was installed.
Copy the multimedia file to be executed to the above directory.
Enter up to 36 alphanumeric characters for a multimedia file name (including an extension).

- **Priority**

Select the order of priority for the voice messages or videos to be played. Select from [Maximum], [High], [Middle], and [Low].

- **Comment**

If it is required, up to 60 alphanumeric characters may be defined for the sound message or video to be played.

- **Test**

This is used when testing the sound message or video to be played. Click the test button again to abort the test.

Repetitive play of a multimedia file, or continuous play of a buzzer through a sound card for extended periods of time will forcibly suspend the play to restart the Multimedia. All queued multimedia files are then deleted, preventing the play of voice messages and videos in these files.

17.12. Browser Bar Tab

The settings of the Browser Bar can be defined on Browser Bar tab.

A typical display of Browser Bar tab is shown as below.

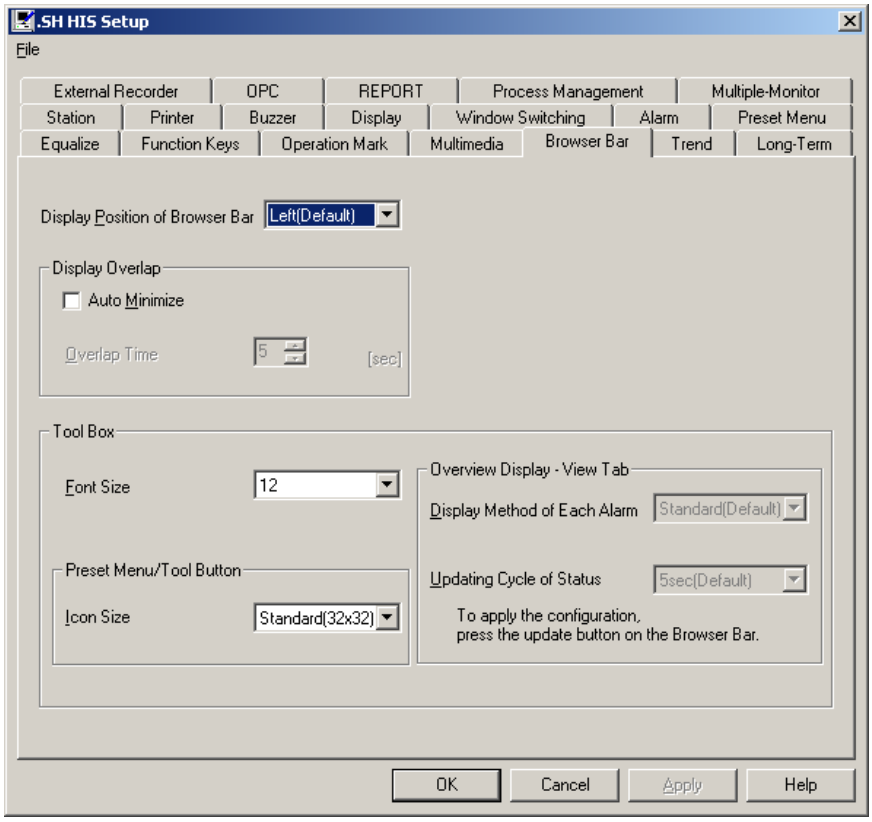


Figure: Browser Bar Tab in HIS Setup Window

- **Display Position of Browser Bar**

Browser Bar can be defined to display at either left side or right side of the container window. The default position is left- side.

- **Display Overlap**

Defines the setting of display overlap of Browser Bar.
•Auto Minimize
The Browser Bar can be minimized if the Browser Bar is not used for a defined time period. For doing so, check this option box.

- **Overlap Time**

If the Browser Bar is idle for this time period, the Browser Bar will be minimized. The time is defined in seconds. This setting is valid only when the [Auto Minimize] option is checked.

- **Tool Box**

Defines the text strings, buttons and icons on the toolbox.

•Font Size
Defines the font size displayed in each toolbox.

•Preset Menu/Tool Button
Defines the icon size displayed in Preset Menu toolbox and Tool Button toolbox.

•Overview Display – View Tab
Defines how the icons on View tab of Overview toolbox behave when the alarms occur. [Display Method of Each Alarm] defines how the icons behave to notify the users when the alarms occur but not been acknowledged. [Standard] means the icon will change color while [Flashing] means the icon will blink. Either option can be selected. The default is [Standard]. [Updating Cycle of Status] defines the refreshing rate of the alarm status.
The setting here need to be validated by clicking the Refresh button on the Browser Bar.

17.13. Trend Tab

On Trend tab, the settings regarding the trend displays can be defined.
A typical display of Trend tab is shown below.

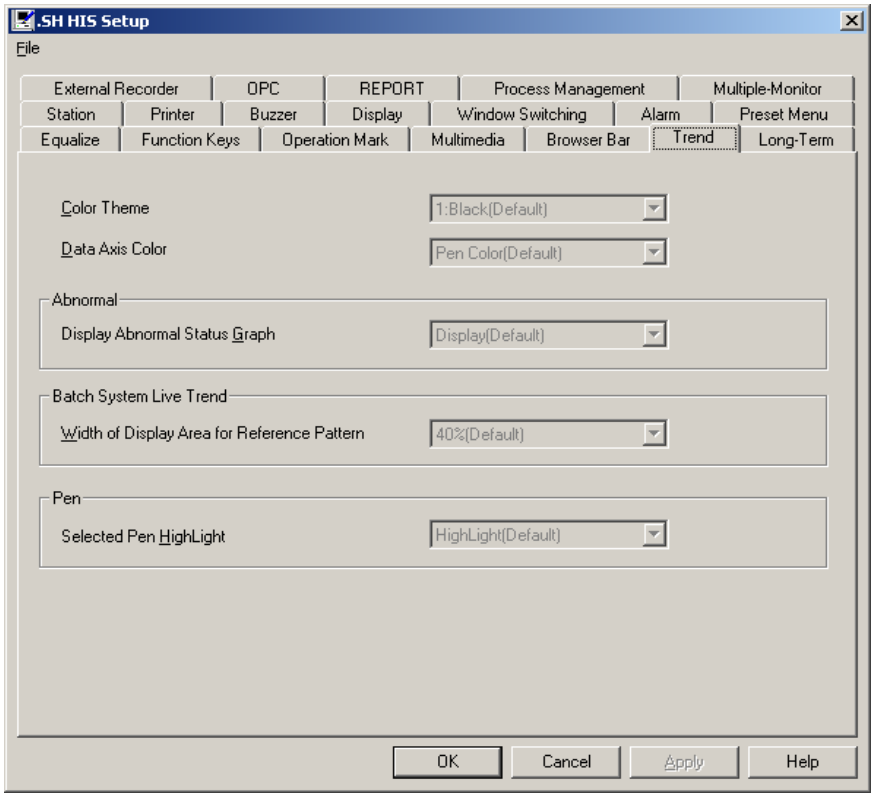


Figure: Trend Tab in HIS Setup Window

- **Color Theme**

Defines the background color of trend graph. Selectable from [Black], [White], [Gray] colors. The default is [Black].

- **Data Axis Color**

Defines the colors of the scale and the label of the trend pen selected on the data axis of the Trend View. There are two options. [Pen Color] means the label and he scale use the same color of the trend pen while [Time Axis Color] means the data axis use a different color. The default is [Pen Color].

- **Abnormal**

Defines how the trend graph displays when the data status become abnormal (i.e., bad data value). There two options, [Display] and [No Display]. The default is [Display].

- **Batch System Live Trend**

When the trend graph and the reference pattern are displayed as overlapped, a ration of trend display and the total display area needs to be defined. The setting range is 0% to 90% with increment of 10%. The default setting is 40%.

- **Pen**

Defines how to display the selected trend pen.

• Selected Pen Highlight

Defines whether to highlight the selected trend pen. Select either [Highlight] or [No Highlight]. The default is [Highlight].

17.14. Long- Term Tab

This tab is for the settings regarding the long-term trend.
This tab can be displayed only when the Long-Term Data Archive Package (LHS6510) is installed.

The figure below shows an example of the Long-Term tab.

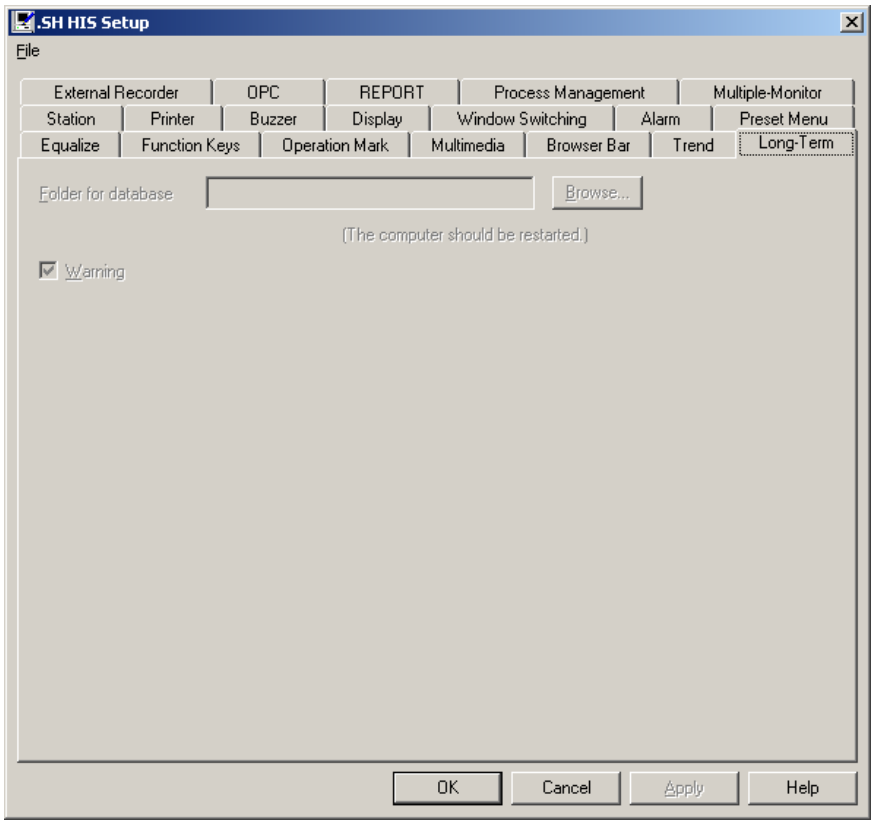


Figure: Long-Term Tab in HIS Setup Window

- **Folder for Database**

Specify a folder for storing the database, folder in the local hard disk should be used. When clicking on the Browse button, a dialog box for selecting folders may appear. Then specify a folder for the long-term data archive files. When the database folder is changed, the computer needs to be restarted.
When the data stored here is displayed in a Trend view on another HIS, a file is shared under the automatically determined shared name.

• **Browse**
Clicking the Browse button calls up the dialog box as shown below to display a long-term data archive directory:

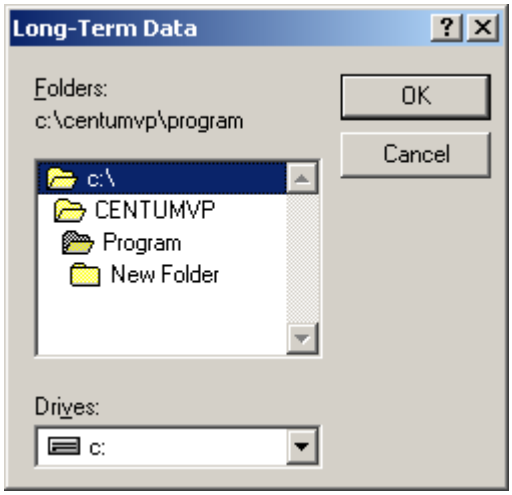


Figure: Long-Term Data Dialog Box

• **Warning**
When checking this mark, a warning message may prompt at the specified period defined by the builders. However, the old files may be deleted to prevent taking full disk space.

17.15. External Recorder Tab

This tab is for the settings regarding the external recorders connected to the CENTUM VP system.
This tab can be displayed only when the Output to External Recorder Package (LHS4150) is installed.

The figure below shows an example of the External Recorder tab.

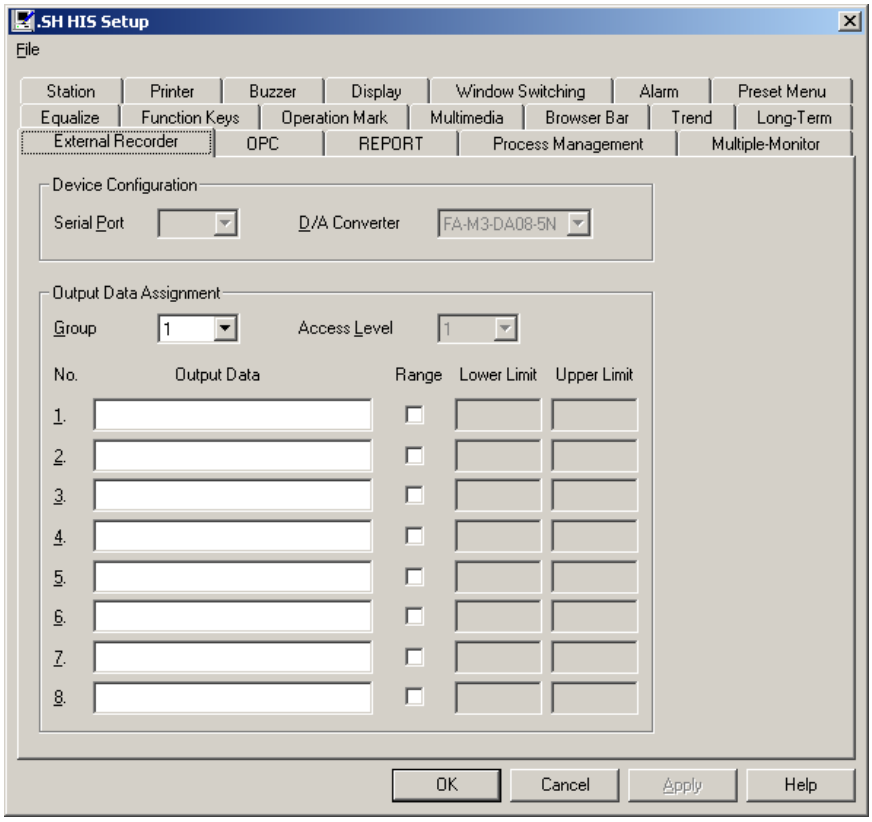


Figure: External Recorder Tab in HIS Setup Window

- **Device Configuration**

Select a device to which the recorder is connected:

• Serial Port

Select a serial port to which a D/A converter (FA-M3) is connected. Select from the serial ports installed on the HIS that are displayed in the list box. This item can be changed only with the access level 3.

• D/A Converter

Select the model name of a D/A converter. Currently, the FA-M3 analog output card [FA-M3-DA08-5N] is the only available option. This item can be changed only with the access level 3.

- **Output Data Assignment**

Assign data to be output to the recorder:

•Group

Select a group to which data to be output to the recorder, is assigned.
Assign the following items for each group:

•Access Level
Select the access level. The data setting and change ranges depend on the access level.

•Output Data
Assign data to be output to the recorder. Enter up to 42 alphanumeric characters for the data name in the format of a tag name followed by a data item name. With the data item name omitted, the process measuring value (PV) is automatically assigned. When a function block with no process measuring value is assigned, the data item name is not omissible.

•Range
Check this check box to change the range of data to be output to the recorder. With this check box unchecked, the upper and lower limits of the assigned function block are used.

•Lower Limit, Upper Limit
Specify lower and upper limits so that the recorder will indicate data output to it in the range of 1-5V DC. This item is valid only with the [Range] check box checked. Specify up to seven digits including the engineering data and the decimal point within the output data range.
When the lower and upper limits are omitted or these limits have the same values, the lower and upper limits for the data item are automatically set.
If the recorded data is the process measuring value (PV) for the timer block or the counter block, the upper limit for the recorded data (PH) is set for the upper limit, and 0 for the lower limit.

The terminals connected to the external recorder but no data assigned to them output 0 V DC. For example, if terminals 1 to 3 are assigned data while terminals 4 to 8 are not (assuming that terminals 1 to 8 are all connected to the external recorder), terminals 4 to 8 output 0 V DC.

17.16. OPC Tab

This tab is for the settings regarding the Exaopc OPC Interface pckage (for HIS).
This tab can be displayed only when the Exaopc OPC Interface Package (for HIS) (LHS2411) is installed.

The OPC tab displays as follows.

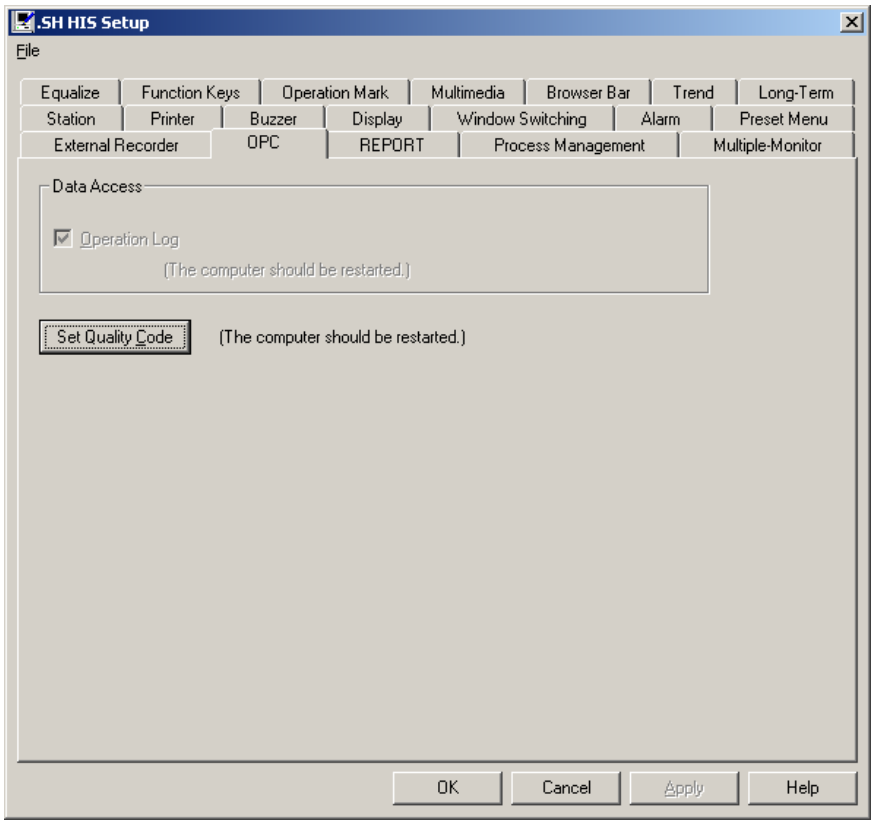


Figure: OPC Tab in HIS Setup Window

- **Data Access**

When writing to OPC Data Access server, the operation messages can be logged. Check the option [Operation Log], the operation messages occurred will be logged.
This setting takes effect only after the PC is restarted.

- **Setting Quality Code**

The dialog box for setting quality codes.
This setting takes effect only after the PC is restarted.

17.17. Report Tab

This tab is for the settings regarding the report package.
This tab can be displayed only when the Report Package (LHS6530) is installed.

The report tab displays as follows.

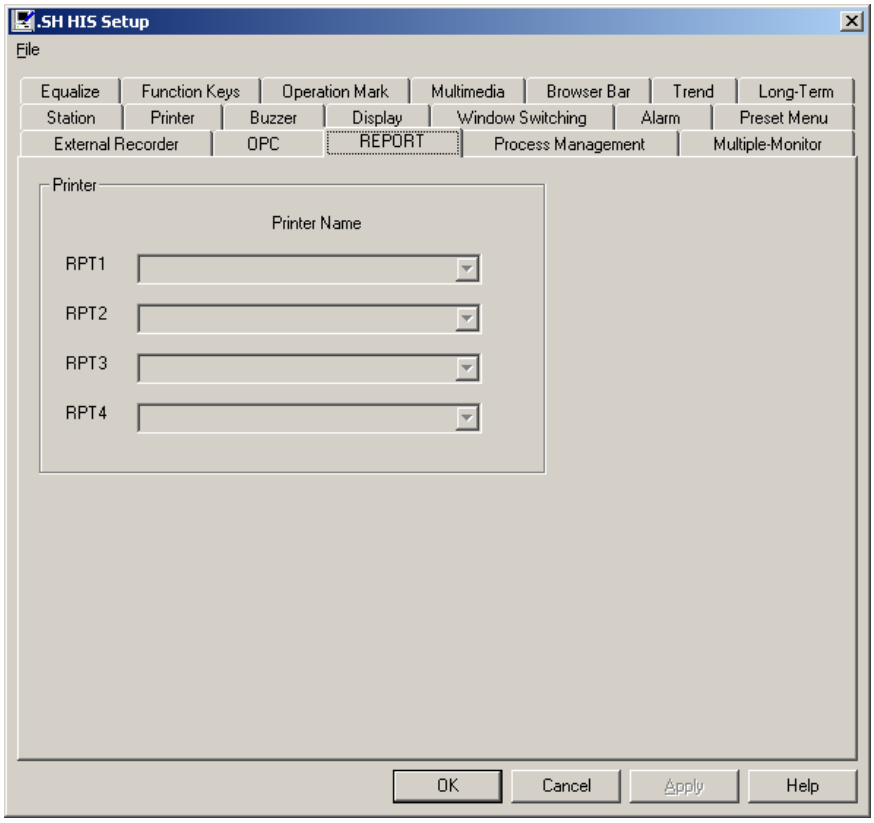


Figure: Report Tab in HIS Setup Window

- **Printer**

A printer for outputting the report can be designated. If the designation is omitted, the default printer of the HIS will be used.

17.18. Process Management Tab

This tab is for the settings of the process management.
This tab can be displayed only when the CS Batch 3000 Process Management Package (for CENTUM VP Entry Class) (for software license) (LHM6600) is installed.

An example of settings on Process Management tab is shown as follows.

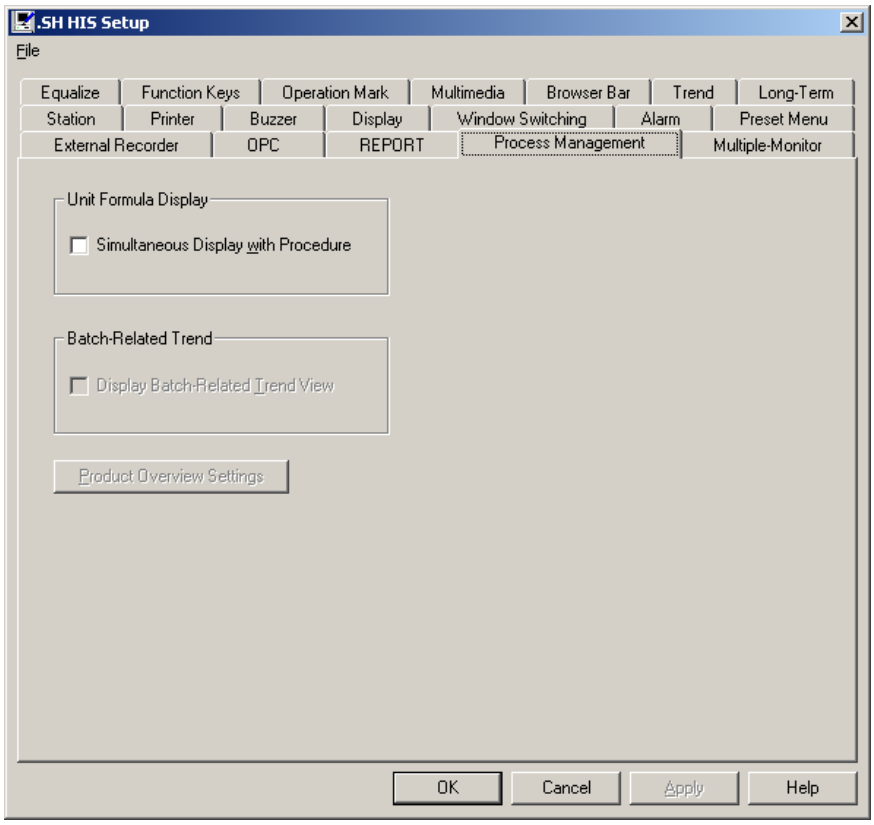


Figure: Process Management Tab in HIS Setup Window

- **Unit Formula Display**

If this check box is checked, the formula dialog box displays when the recipe procedure view or unit recipe procedure view is displayed. By default, this check box is not checked.

- **Batch Related Trend**

When checking the option [Display Batch-Related Trend View] on a client HIS or a backup server is checked, the batch-related trend views can also be displayed.
However, the following conditions need to be confirmed regarding to this setting.
•This setting is irrelevant for HIS master server.
•When this option is check, the trend acquisition pen assignment (including the acquisition of different stations) the on the HIS should be the same as in HIS master server. Otherwise, the display of the batch-related trend view may different from the HIS master server.

- **Product Overview Settings**

Click [Product Overview Settings], Product Overview Settings dialog box displays.

On this dialog box, the toolbar and tool buttons on Product Overview can be customized.

17.19. Multiple- Monitor Tab

This tab is for the settings regarding the multiple monitors.
This tab can be displayed only when the Multiple-Monitor Support Package (LHS4600) is installed.

An example of settings on Multiple-Monitor tab is shown as follows.

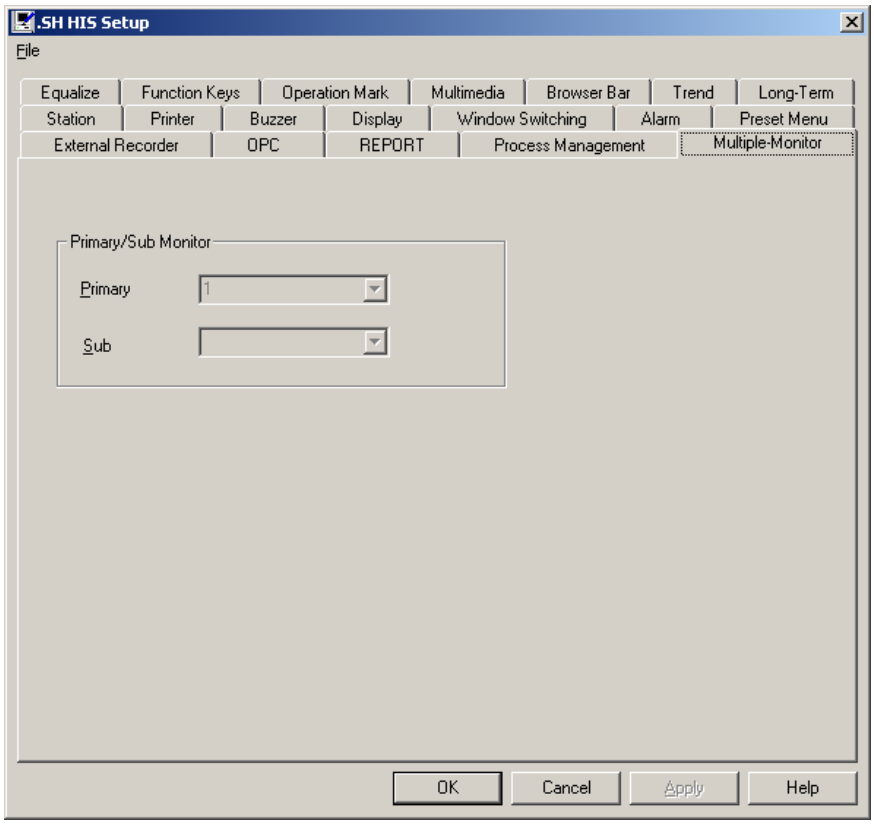


Figure: Multiple-Monitor Tab in HIS Setup Window

- **Main Monitor and Auxiliary Monitor**

In the multiple-monitor configuration, one monitor is used as main monitor and the others are used the auxiliary monitors.
On Display Properties of Windows, the monitor number of the primary monitor needs to be defined as the monitor number of the main monitor, the monitor numbers of the rest monitors can be defined as the monitor numbers of the auxiliary monitors.

18. OPERATION KEYBOARD

This chapter describes the functions of the CENTUM operation keyboards and auxiliary contact I/O provided on the console-type HIS. The keys on the operation keyboards are so arranged that user can operate with a touch of a key in most operations.

18.1. External Appearance of the Operation Keyboards

The following figures show the key arrangement of operation keyboards.

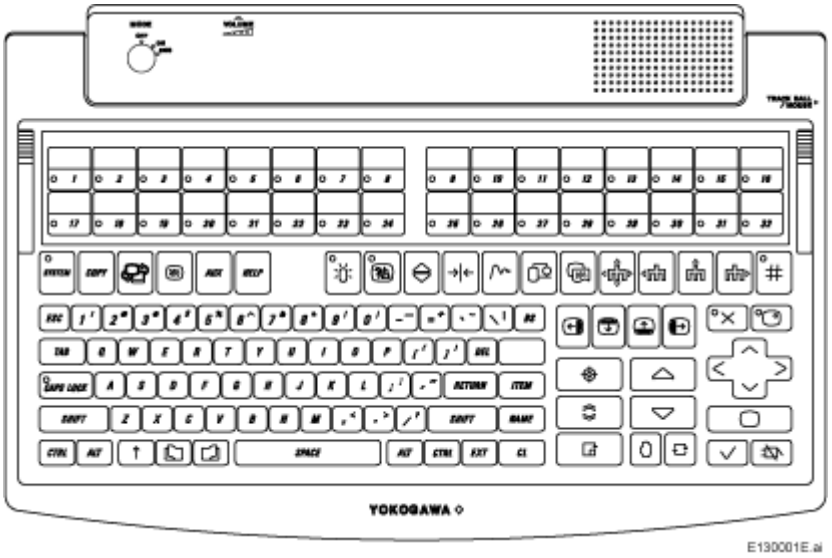


Figure: Operation Keyboard (for Single-Loop Operation)

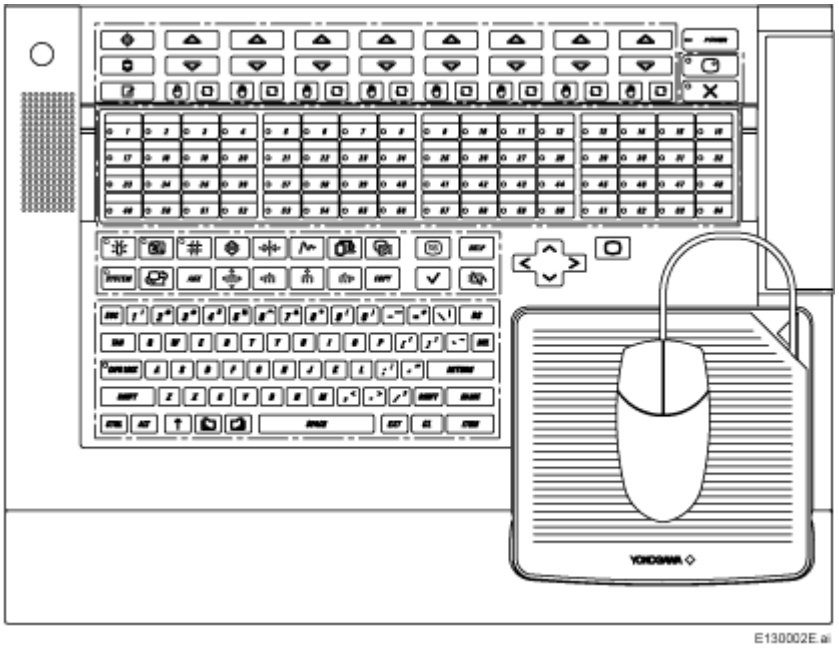


Figure: Operation Keyboard (for Console Type HIS)

18.2. Mode Selection Key

You can use a mode selection key to change user's privilege level temporarily.

Types of Mode Selection Keys
Two types of mode selection keys are available:

•Operation key
Allows user to switch between OFF and ON positions.

•Engineering key
Allows user to switch between OFF, ON, and ENG positions.

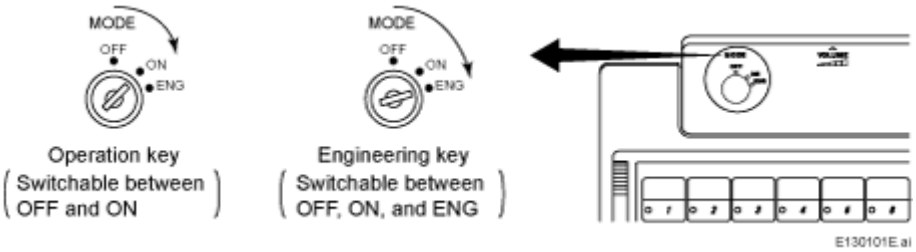


Figure: Mode Selection Keys

While any operation and monitoring window is open, you can change user's privilege level using either of the mode selection keys without performing a re-display operation after the change. When CAMS for HIS is enabled, user can acknowledge alarms and messages regardless of the position of the mode selection key.

18.3. Function Keys

There are function keys on the operation keyboard. User can assign predetermined commands to function keys.
Each function key is provided with an LED and a label. The LED blinks to notify operator of an alarm or to prompt operator to take a required action. The label is for showing an assigned function.
You can assign commands to the function keys on the Function Key Assignment Builder or in the Function Key tab sheet of the HIS Setup window.

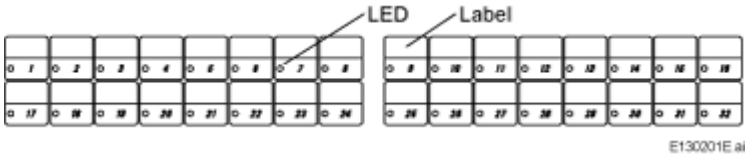


Figure: Function keys (for Single-Loop Operation)

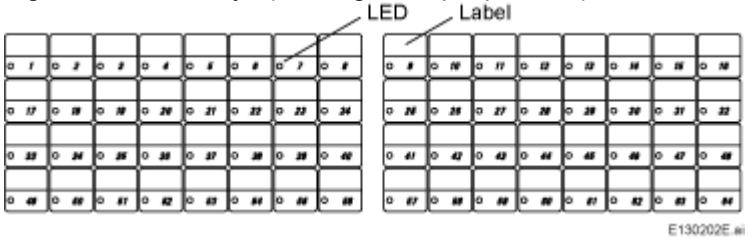


Figure : Function keys (for Console Type HIS)

If commands have been assigned to the same function keys on the Function Key Assignment Builder and in the HIS Setup window, the setting that was made last takes effect

Commands Assignable to Function Keys
You can assign the following types of commands to the function keys.
The alphabetic character in the parentheses is the command character used on the Function Key Assignment Builder for assigning the command.

•Call Window (O)
Calls up a specified operation and monitoring window. From specific types of operation and monitoring windows, you can call up their associated builder by adding “BDR” as the function parameter to the window name. (*1)

•Call Frame (G)
In full-screen mode, calls up a frame in the main window.

•Execute System Function Key (K)
Runs a predefined system function key command.

•Execute Command for the Specified Monitor (L)
In a multiple-monitor environment, executes a system function key command on a specified monitor.

•Start/Stop/Resume Trend (T)
Starts, stops, or resumes batch trend data acquisition.

•Flash/Light/Turn OFF the LED (E)
Flashes, lights or turns off the LED on each function key.

•Execute a Program by File Name (F)
Runs a program of the specified name.

•Play/Repeat/Stop Multimedia File (X)
Plays a multimedia file of the specified name.

•Send Event to ActiveX Control (D)
Sends an event to the ActiveX control of a graphic view.

•Execute Panel set (P)
Calls up a predefined panel set.

•Call Window to Other Station (S)
Calls up an operation and monitoring window on a specified HIS.

•Clear Window on Other HIS (S)
Clears the windows displayed on a specified HIS.
*1:“BDR” is only valid when the Standard Builder Function package or Configured Information Reference package is installed on the HIS computer.

LED Flashing Conditions
You can specify a name or window name as the condition for triggering flashing of LED on the function key.
•A tag name or an annunciator message.
•A window name. (Graphic view, Process Alarm view, Operator Guide Message view, System Alarm view)

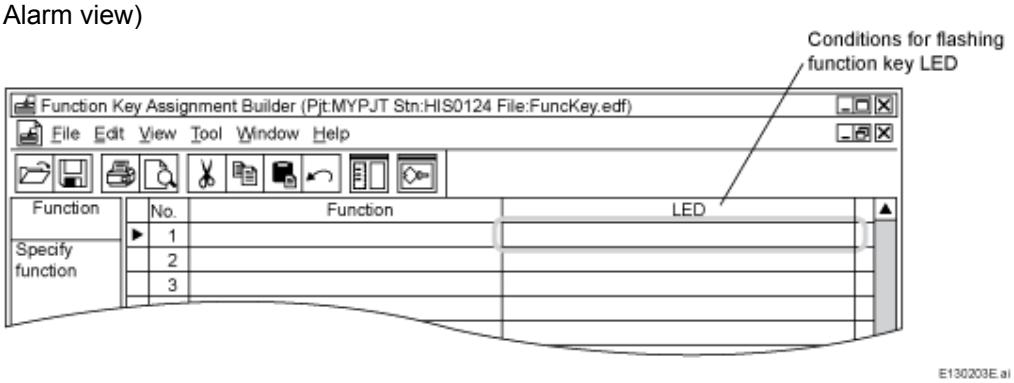


Figure: Setting LED Flashing Conditions on the Function Key Assignment Builder

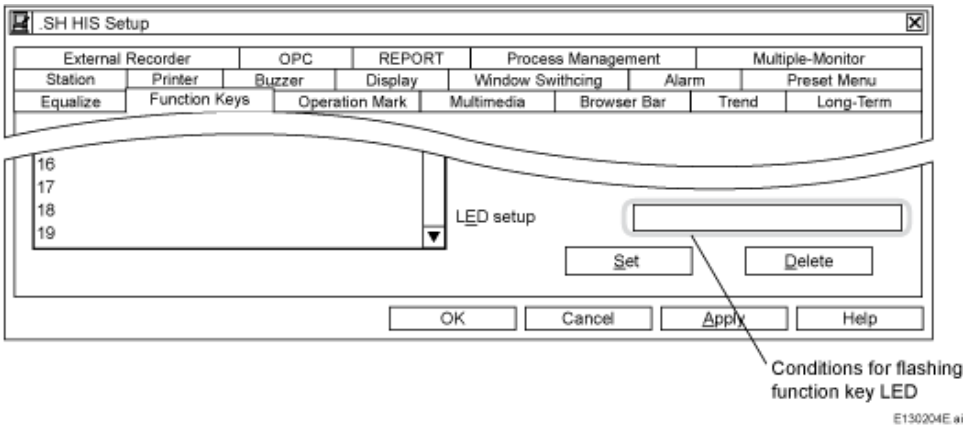


Figure : Setting LED Flashing Conditions in the HIS Setup Window

If the function block or view specified as the condition for flashing LED changes to an alarm state, the LED flashes. When operator acknowledges the alarm, the flashing LED changes to a lit LED. If the alarm state returns to normal, the LED turns off.
When a window name is set as the condition, a parameter can be specified. Parameters can be specified for the windows (Process Alarm View, System Alarm View, etc.) that accept parameters when called up.

Authority to Change Function Key Assignments
Whether or not the function key assignment can be changed in the HIS Setup window is specified by setting one of the following security levels for each function key. Combination of the security level set for the function key and the privilege level (S1, S2, S3) of the user determines if the user can change the function assigned to the function key.
•General
•Important
•System operation

Relation of the security level of each function key and the privilege level of a logged-in user is as follows:
•A user with privilege level S1 is allowed to change the function assignment of function keys with “general” security level.
•A user with privilege level S2 is allowed to change the function assignment of function keys with “general” and “important” security levels.
•A user with privilege level S3 is allowed to change the function assignment of any function keys.

However, operation and monitoring related authorities for the function keys are defined as follows:
•Monitoring: None
•Operation: Authority to change function assigned to the function keys

If you download the data defined on the Function Key Assignment Builder after the function key assignments have been changed in the HIS Setup window, the assignments made by the builder will take effect

18.4. Touch Keys on Operation Keyboard

Various one-touch keys are provided on the operation keyboard to facilitate operation.

Window Calling Keys

The following figure shows how the window calling keys are arranged.

E130301E.ai

Figure: Window Calling Keys

The function of each window calling key is described below.

E130302E.ai

Calls up the System Status Overview. The LED on this button indicates whether any system alarm message has been generated, acknowledged, or not generated.
•Flashing in red
System alarm message has been generated but not acknowledged yet.
•Lit in red
System alarm messages were generated and all the messages have been acknowledged.
•Unlit
No system alarm message has been generated.

E130303E.ai

Outputs the entire screen image to a printer or a file.

E130304E.ai

Switches the layers of the operation and monitoring windows and windows of the general-purpose Windows applications back to front and vice versa.

E130305E.ai

Closes all the HIS windows on the monitor.

E130306E.ai

Shows the User-In dialog box and Browser Bar. In the upper half of the Browser Bar, Tool Button Toolbox is shown and in the lower half of the Browser Bar, Preset Menu Toolbox is shown. Pressing the keys [ALT] + [CTRL] + [F12] at the same time has the same effect as the AUX key.

E130308E.ai

Calls up a Help window showing help messages related to the active window.


E130308E.ai

Calls up a Process Alarm view. The LED on this button indicates whether any process alarm message has been generated, acknowledged, or not generated.
•Flashing in red
Process alarm message has been generated but not acknowledged yet.
•Lit in red
Process alarm messages were generated and all the messages have been acknowledged.
•Unlit
No process alarm message has been generated.


E130310E.ai

Calls up an Operator Guide view. The LED on this button indicates whether any operator guide message has been generated, acknowledged, or not generated. If CAMS for HIS is enabled, CAMS for HIS Message Monitor is shown.
•Flashing in green
An operator guide message has been generated and is unacknowledged.
•Lit in green
Operator guide messages were generated and all the messages have been acknowledged.
•Unlit
No operator guide message has been generated.


E130311E.ai

Calls up a Graphic view (with control attribute).


E130312E.ai

Calls up a Tuning view.


E130313E.ai

Calls up a Trend view.


E130314E.a

Calls up a Graphic view (with graphic attribute).


E130315E.ai

Calls up a Process Report view.


E130316E.ai

Opens the Browser Bar. The Browser Bar shows the Overview Toolbox showing the View tab sheet.


E130317E.ai

Calls up the hierarchy windows of the active window in ascending order defined in the window hierarchy.


E130318E.ai

Calls up the upper window of the active window.


E130319E.ai

Calls up the hierarchy windows of the active window in descending order defined in the window hierarchy.


E130320E.ai

Calls up a Graphic view (with overview attribute).

Operation Control Keys

These keys are used for instrument faceplate operation.


E130321E.ai

In manual mode (MAN), switches the data for operation from the manipulated output value (MV) to the setpoint value (SV).


E130322E.ai

Increases the target data. While the INC key is being pressed, the data increases by 1 % of the full scale every 0.2 second. Therefore, it takes 20 seconds for the SV or MV pointer in the faceplate to move over the full stroke.


E130323E.ai

Decreases the target data. While the DEC key is being pressed, the data decreases by 1 % of the full scale every 0.2 second. Therefore, it takes 20 seconds for the SV or MV pointer in the faceplate to move over the full stroke.


E130324E.ai

In INC/DEC operation for analog-type data, pressing this key and the INC key or DEC key at the same time quadruples the rate of increase or decrease.


E130325E.ai

This button is use to change the block mode to the cascade mode (CAS) or semiautomatic mode (SEMI). Pressing the AUT key and this key at the same time changes to the cascade mode. Pressing the MAN key and this key at the same time changes to the semiautomatic mode.


E130326E.ai

Changes the block mode to manual mode (MAN).


E130327E.ai

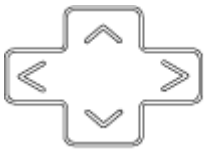
Changes the block mode to automatic mode (AUT).

Other Keys


E130328E.ai

Confirms and executes the operation.


E130329E.ai
Cancels the operation.


E130330E.ai
Moves the cursor up, down, left, or right in the active window.


E130331E.ai
Shows the selected item. (Equivalent to a mouse click)


E130332E.ai
Stops the buzzer sound generated upon output of an alarm.


E130333E.ai
Acknowledges the alarm.


E130334E.ai
Scroll the active window.


E130335E.ai
Same function as the [Page Up] key on a computer keyboard.


E130336E.ai
Same function as the [Page Down] key on a computer keyboard.

E130337E.ai
Changes data items.

E130338E.ai
Opens the Browser Bar and shows the Name Input Toolbox.

E130339E.ai
Closes a dialog box or other windows. Same function as the ESC key.

E130340E.ai
Switches between double width and standard width characters.


E130341E.ai
When this key is used in combination with the [1] to [0], [-] and [=] keys, the functions corresponding to the [F1] to [F12] keys on a computer keyboard can be executed.
For example, [↑] + [1] executes the F1 function. The [0], [-] and [=] keys correspond to the [F10] , [F11] , and [F12] keys, respectively.

18.5. Auxiliary Contact I/O Function

Two auxiliary contact inputs and two auxiliary contact outputs are provided on the console type HIS. To the auxiliary contact inputs, the functions assignable to the function keys can be assigned. The auxiliary contact outputs can be configured to operate in the similar way as the LED on a function key.

Auxiliary Contact Inputs

Any one of the functions assignable to the function keys can be assigned to the auxiliary contact inputs. This assignment is made on the Auxiliary Contact Input/Output tab sheet of the Function Key Assignment Builder.

Auxiliary Contact Outputs

Like the LED on a function key, the auxiliary contact outputs can be configured to turn on or off according to the alarm status. On the Auxiliary Contact Input/Output tab sheet of the Function Key Assignment Builder, specify the name of a tag or window for which alarm status is to be monitored in up to 28 alphanumeric characters.
The ON and OFF states of the contact correspond to the turning on and turning off of the LED. Note that the auxiliary contact output will be ON in the cases where an LED might flash.

The auxiliary contact outputs can also be turned on or off like the LED on a function key by specifying LED number 101 or 102 in the E command.

19. CONSOLIDATED ALARM MANAGEMENT SOFTWARE

CENTUM VP provides Consolidated Alarm Management Software for HIS (hereinafter referred to as “CAMS for HIS”) customized for HIS applications. A CAMS for HIS supports EEMUA No.191 that defines a set of guidelines for alarm management.

19.1. What is CAMS for HIS?

CAMS for HIS permits alarm and event (hereinafter referred to as “A&E”) messages like system alarm messages, process alarm messages, operation guide messages to be centrally managed.
After enabling the CAMS for HIS on [CAMS for HIS] tab of HIS Utility, System Alarm view and Process Alarm view will be replaced by the Message Monitor of CAMS for HIS. Moreover, after un-checking the option of [Exclude operation guide messages], (since operation guide messages can also be handled by CAMS for HIS) the Operator Guide view will be replaced by the Message Monitor of CAMS for HIS.

The Message Monitor of CAMS for HIS is shown below.

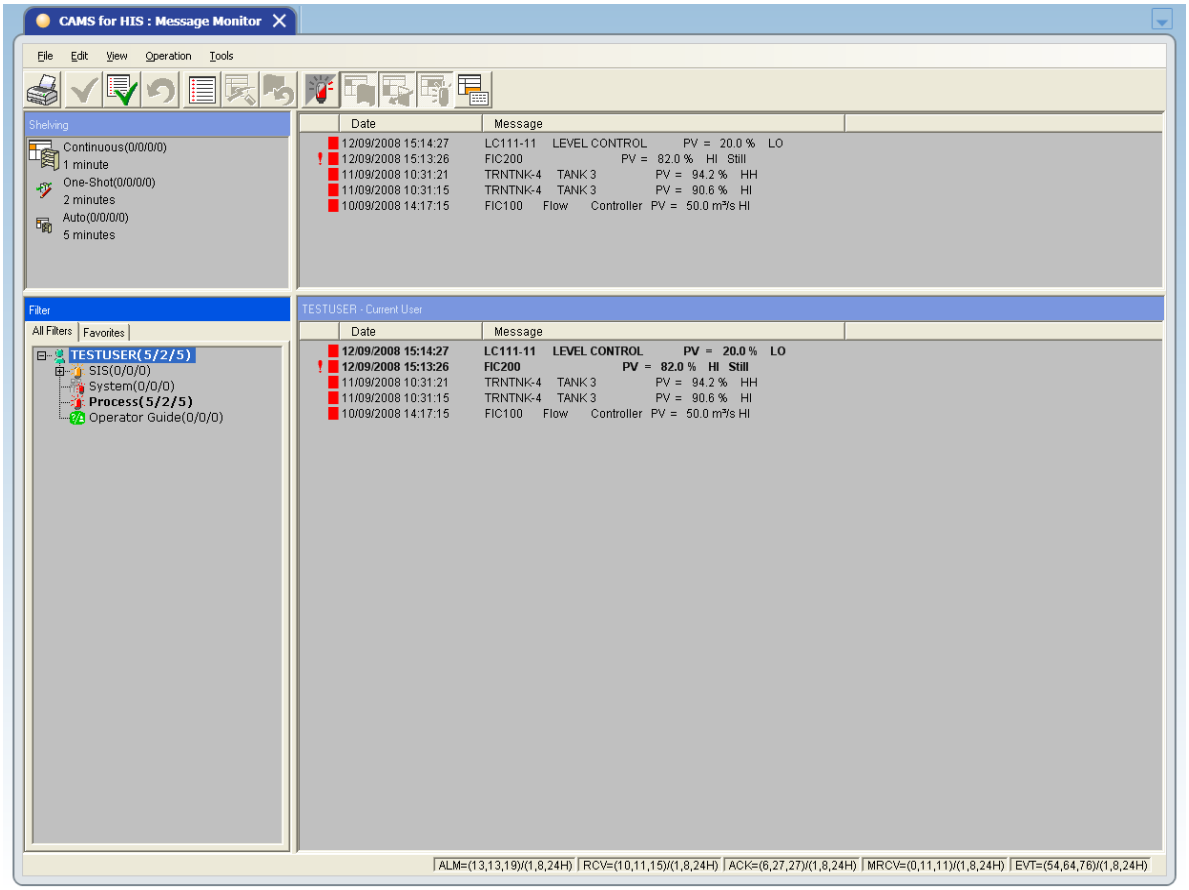


Figure: The Message Monitor of CAMS for HIS

System Configuration of CAMS for HIS

A CENTUM VP system configuration using CAMS for HIS is shown below.
By connecting an OPC A&E server, A&E messages generated in the connected STARDOM or PRM systems can also be consolidated and managed on the HIS, along with A&E messages generated in the CENTUM system.
A&E messages are equalized between multiple HISs in which CAMS for HIS is enabled. Desired HISs can also be selected, from these multiple HISs, to implement A&E message equalization. On the HISs in the Equalization Scope, all A&E messages including alarms received via an OPC server are equalized. In each Equalization Scope, only one Download Master exists for downloading data with Configurator of CAMS for HIS. Database files are always downloaded to each HIS via the Download Master.

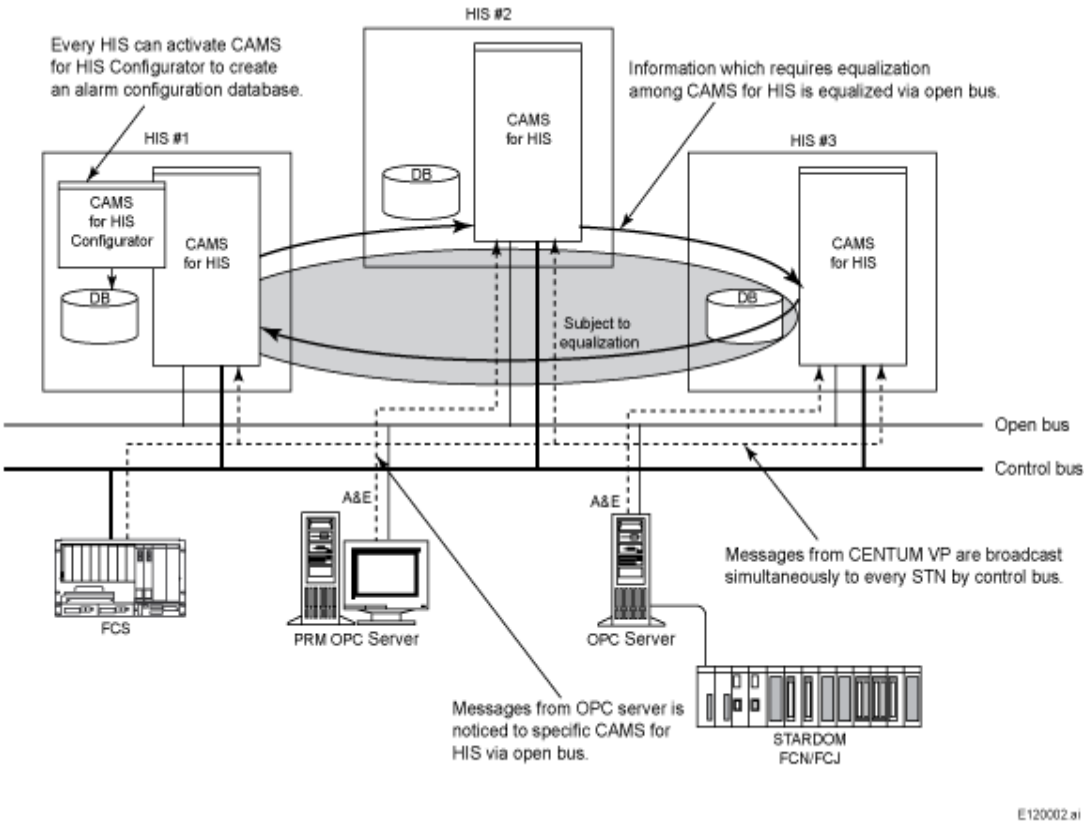


Figure: System Configuration of CAMS for HIS

If the power of Download Master is turned off, data cannot be downloaded to the database. However, operation and monitoring of A&E messages is not affected

19.2. Functions of CAMS for HIS

CAMS for HIS provides various functions to make CENTUM VP system compliant with EEMUA No.191.

A&E Message Processing by CAMS for HIS

The following describes the A&E message processing functions available in CAMS for HIS.

Alarm Acquisition
Receives A&E messages from PRM and STARDOM via an OPC server, in addition to which generated within CENTUM VP.

Normalization
Adds attributes, such as source name, timestamp and priority, to received A&E messages based on the settings file created by the Configurator of CAMS for HIS. Normalization standardizes the way A&E messages are expressed in different systems, to make comparison of these A&E messages easy.

Grouping
Consolidates associated alarms into an alarm group. The user defines the conditions for grouping alarms.

Attribute Addition, or Change
Adds conditions for grouping alarms, or changes existing conditions.

Suppression
Suppresses unnecessary alarms.

Shelving
Temporarily moves (shelves) alarms of lower priorities to other location from the A&E Messages pane, in order to facilitate the recognition of more important alarms in the A&E Browser pane and A&E Messages pane. This prevents the operator from overlooking important alarms among lower-priority alarms when many alarms are present.

Load shedding
Shows only those messages matching the pre-defined search conditions once the number of alarms generating in a specified period exceeds the threshold.

Sorting
Sorts A&E messages based on desired items and shows the sorted A&E messages in the A&E Messages pane.

Filtering
Shows, among the A&E messages displayed in the A&E Messages pane, only those alarms meeting specific conditions. It is possible to reduce the number of displayed alarms.

Audit Trails
Manages audit trails regarding the settings information relating to CAMS for HIS created by Configurator of CAMS for HIS.

User Security Policy
Restricts the permissions on A&E Messages monitoring, change of system settings and other operations for each user.

Management of Alarms
Manages the statuses of alarms and alarm groups (acknowledged, unacknowledged, etc.) and deletes unnecessary alarms.

Alarm System Design
Using CAMS for HIS, this function sets various items needed to implement the specific alarm processing desired by the user. This function is provided by Configurator of CAMS for HIS.

19.3. Message Monitor of CAMS for HIS

This section explains the structure of the message monitor of CAMS for HIS.

Appearance of the Message Monitor of CAMS for HIS
The figure below shows the appearance of the message monitor of CAMS for HIS.

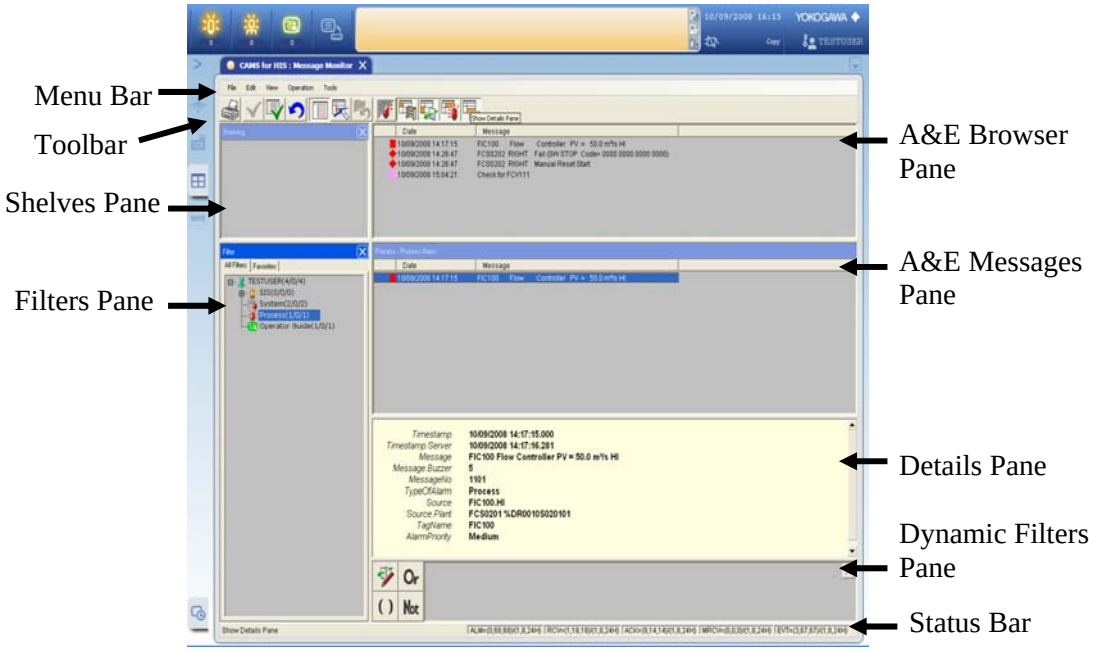


Figure: Appearance of the Message Monitor of CAMS for HIS

19.4. Layout of the Message Monitor of CAMS for HIS

The CAMS for HIS consists of the following bars and panes.
•Menu Bar
•Toolbar
•Shelves Pane
•Filters
•A&E Browser Pane
•A&E Messages Pane
•Details Pane
•Dynamic Filters Pane
•Status Bar

Menu Bar
Operations available in the Message Monitor of CAMS for HIS can be selected using the menu items in the menu bar. A list of menu items is shown below.

Table: Menu Items in the Message Monitor of CAMS for HIS

Menu		Description
File		
	Commit Changes	Saves the settings for the Message Monitor of CAMS for HIS. The committed changes will affect all the CAMS for HIS message monitors for the same user privileges in the equalization scope.
	Reset to System Default	Reverts all changes made by the operator to the original system common settings.
	Properties	Displays the properties of the specified element, such a shelf or filter.
	Print	Print the screen image being displayed.
	Exit	Exits the Message Monitor of CAMS for HIS.
Edit		
	Add Filter	Adds a filter under the specified filter.
	Delete Filter	Deletes the specified filter.
	Cut	Cuts the specified filter.
	Copy	Copies the specified filter.
	Paste	Pastes the cut or copied filter.
	Add Favorites	Adds the specified filter to the Favorites tab sheet.
	Delete Favorites	Deletes the specified filter from Favorites tab.
View		
	Switch Layout	Switches the window layout.
	Show Alarm Tree	Shows the A&E Messages pane in the tree view.
	Shelves Pane	Sets whether to show or hide the Shelves pane.
	Filter Pane	Sets whether to show or hide the Filter pane.
	A&E Browser Pane	Sets whether to show or hide the A&E Browser pane.
	Details Pane	Sets whether to show or hide the Details pane.
	Suppression...	Calls the Suppression dialog box.
Operation		
	Acknowledge	Acknowledges individually the alarms specified in the A&E Messages pane.
	Acknowledge All	Acknowledges simultaneously all alarms currently displayed in the A&E Messages pane.
	Manual Reset	Resets individually the alarms specified in the A&E Messages pane.
	Manual Reset All	Resets simultaneously all alarms currently displayed in the A&E Messages pane.
	Reset Shelf	Resets the specified shelves.
	Shelve	
	Shelf 1	Put the selected A&E messages or the filter settings to this shelf.
	Shelf 2	Put the selected A&E messages or the filter settings to this shelf.
	Shelf n (n indicates the shelf number)	Put the selected A&E messages or the filter settings to this shelf.
	Clear Details Pane	Deselects the selected A&E messages and clears the contents in Details pane.
Tools		
	Options...	Displays the Option Window.

E120203E.ai

Toolbar
You can define the buttons such as Acknowledge, Acknowledge All, or Manual Reset on the Toolbar. The figure below shows an example of Toolbar in the Message

Monitor of CAMS for HIS with defined buttons.


Figure: Toolbar Buttons in the Message Monitor of CAMS for HIS (Default)

The toolbar buttons are explained below.


Print: Prints the contents currently shown in the A&E messages pane.


Acknowledge: Acknowledges the A&E messages selected from the list in the A&E messages pane.


Acknowledge All: Acknowledges all the A&E messages shown in the A&E messages pane.


Manual Reset: Resets the acknowledged A&E messages selected from the list in the A&E messages pane. (Only A&E messages that are allowed to reset manually)


Switch Alarm View: Switches between “Alarm list” and “Show Alarm Tree” in A&E messages pane with each click.


Clear Details Pane: Deselects the selected A&E messages and clears the contents in Details pane.


Clear Shelf: Removes all the A&E messages for shelving from the shelves.


Suppression: Displays the Suppression dialog box.

Show Shelves Pane: Switches between “Show” and “Hide” Shelves pane with each click.

Show Filter Pane: Switches between “Show” and “Hide” Filter pane with each click.

Show A&E Browser Pane: Switches between “Show” and “Hide” A&E Browser Pane with each click.

Show Details Pane: Switches between “Show” and “Hide” Details Pane with each click.

Change Window Layout: Changes the width of the A&E message displaying area on the A&E Browser pane by one clicking.

Show/Hide A&E Browser Pane Background: Changes between the Standard and Zebra patterns for the background pattern of the A&E Browser pane by one clicking.

Show/Hide A&E Messages Pane Background: Changes between the Standard and Zebra patterns for the background pattern of the A&E Messages pane by one clicking.

Run...: Starts a pre-assigned application.

Call HIS Window: Calls the assigned operation and monitoring window.

Commit Changes: Saves the settings for the Message Monitor of CAMS for HIS.

Reset to System Default: Reverts all changes made by the operator to the original system common settings.

Shelves Pane
This pane is used to perform shelving of alarm messages. The Shelves pane shows shelf icons, shelf names and information of alarms that are currently shelved. An example of the Shelves pane is shown below.

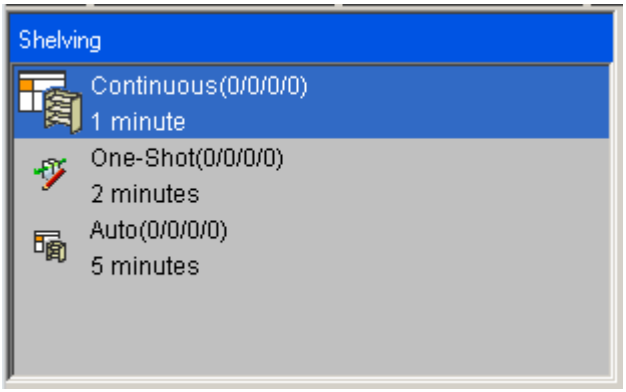


Figure: Example of the Shelves Pane

Filter Pane
This pane is used to filter alarm messages. An example of the Filter pane is shown below.

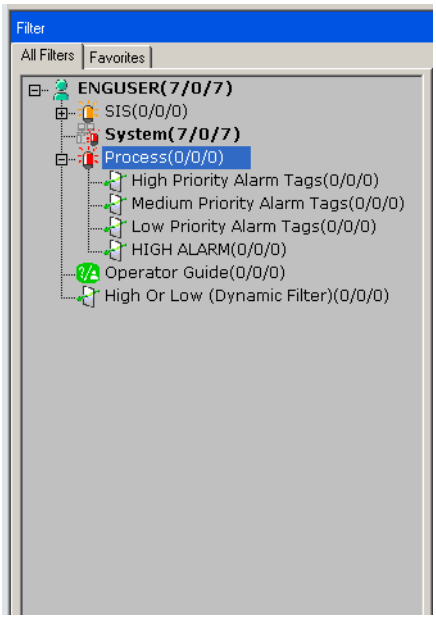


Figure: Example of the Filter Pane

A&E Browser Pane
This pane is used to reference A&E messages. You cannot perform shelving or filtering, acknowledgment operations or display detail information in this pane.
New A&E messages can be inserted either at the beginning or end of the display pane. By default, they are inserted at the beginning of the display pane.
A&E messages can also be sorted. Where new A&E messages will be shown follows the sorting conditions.

A&E Messages Pane
This pane is used to display A&E messages. One message is shown in one line.Shelving, filtering, acknowledgment operations, display detail pane and other operations are performed on the messages shown in this pane.
New A&E messages can be inserted either at the beginning or end of the display pane. By default, they are inserted at the beginning of the display pane. In the Filter pane, filter icons associated with unacknowledged A&E messages, if any, also blink.
If the Emphases on Unread Alarms function is enabled, new A&E messages are shown in bold, while the names of associated filters are also shown in bold.
A&E messages can also be sorted. Where new A&E messages will be shown follows the sorting conditions.

Details Pane
This pane is linked to the A&E Messages pane, and when one alarm is selected in the A&E Messages pane, the causes, actions to take and other detail information of the alarm are shown here.
Clicking the [Clear Details Pane] in the toolbar cancels the alarm selections in the A&E Messages pane. The Details pane is also cleared and only the background color is shown.

Dynamic Filter Pane
You can narrow down alarms by combining multiple filter conditions. Combinations of filter conditions are set in the Dynamic Filter pane.
This pane is not normally displayed. To display the Dynamic Filter pane, select a filter icon in the Filter pane and drag it to near the status bar.

Status Bar
On Status bar, the following items are displayed
•ALM: Number of A&E messages occurred per time unit (1 hour, 8 hours or 24 hours)
•RCV: Number of alarms recovered per time unit (1 hour, 8 hours or 24 hours)
•ACK: Number of A&E messages acknowledged per time unit (1 hour, 8 hours or 24 hours)
•MRCV: Number of manually reset alarms per time unit (1 hour, 8 hours or 24 hours)
•EVT: Number of events out of the A&E messages per time unit (1 hour, 8 hours or 24 hours)

19.5. Changing the Layout of the Message Monitor of CAMS for HIS

The layout of the Message Monitor of CAMS for HIS can be changed to enhance the visibility of A&E messages.

Switching the Layout of the Message Monitor of CAMS for HIS
The Message Monitor of CAMS for HIS can be shown in two layout patterns: one in which the A&E Browser pane is positioned to the right of the Shelves and Filter panes, and the other in which the A&E Browser pane is positioned above the Shelves and Filter panes. To switch between the two display patterns, click [View] in the menu bar and then select [Switch Layout], or click the [Change Window Layout] button in the toolbar.

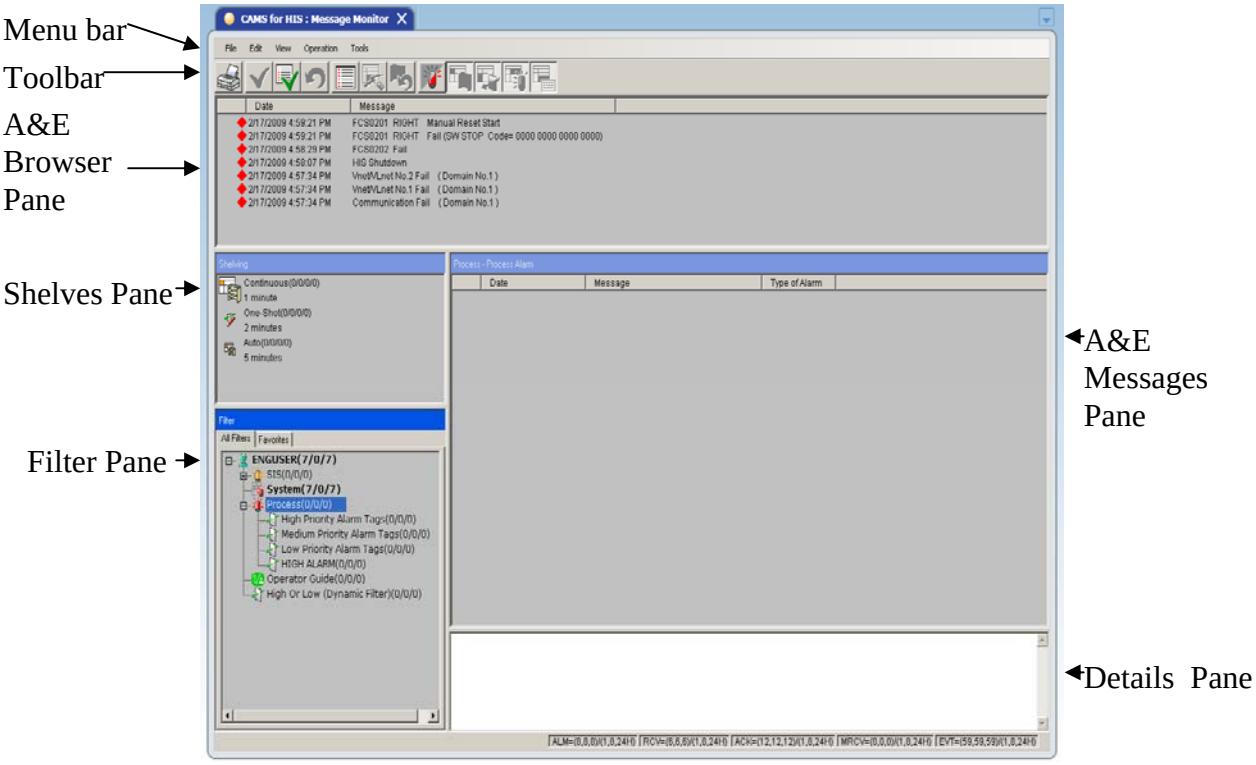


Figure: Switching the Layout of the Message Monitor of CAMS for HIS (Example of A&E Browser Pane Shown Above)

19.6. Screening Alarms

The Message Monitor of CAMS for HIS lets you effectively manage frequent alarms. With the help from this window, there are no more oversights of important alarms.
The applicable functions are listed below.
•Shelving
•Filtering
•Dynamic Filtering
•Message Tree View
•Suppression

19.7. Shelving

Alarms of lower priorities can be temporarily moved (shelved) to other location from the A&E Messages pane to make it easier to recognize more important alarms.

Display of Shelved Alarms
The Shelves pane is divided into several fields corresponding to different shelving conditions. These fields are called “buttons.” The information of shelved alarms is shown below each button with a shelf name.
A display example of button is shown below.

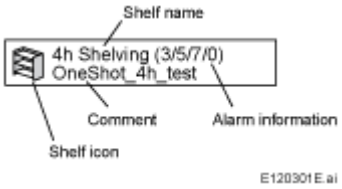


Figure: Button for Shelved Alarms

The alarm information shown on the button includes, from the left, the number of A&E messages currently present, number of unacknowledged A&E messages, number of shelved A&E messages, and A&E messages that remain shelved beyond the timeout period.
When a desired button associated with shelved alarms is selected, the shelved A&E messages will be shown in the A&E Messages pane.

Types of Shelving
Three types of shelving are available.
•Continuous Shelving
•One-Shot Shelving
•Auto-Shelving
The following explains each of these shelving types.

Continuous Shelving
A&E messages identical to each A&E message specified for shelving are shelved continuously. Any reset messages associated with these messages are also shelved continuously.
Once the specified time elapses, CAMS for HIS notifies that A&E messages remain shelved. Thereafter, CAMS for HIS will not shelve any of those identical messages even when they are issued.

One-Shot Shelving
Only the A&E message specified for shelving is shelved.
Once the specified time elapses, CAMS for HIS notifies that the A&E message remains shelved.

Auto-Shelving
Applicable alarms are shelved continuously in accordance with the filter conditions set for these alarms specified for shelving.
Once the specified time elapses, CAMS for HIS notifies that A&E messages remain shelved. Thereafter, CAMS for HIS will not shelve any of those identical messages even when they are issued.
The filters that use Batch ID as criterion are not subject to Auto-Shelving.

Starting Shelving
In CAMS for HIS, shelving conditions are set for each button in the Shelves pane. To start shelving, select an A&E message to be shelved, or a filter condition, and drag and drop it onto a desired button.

An example of how shelving is started is shown below.

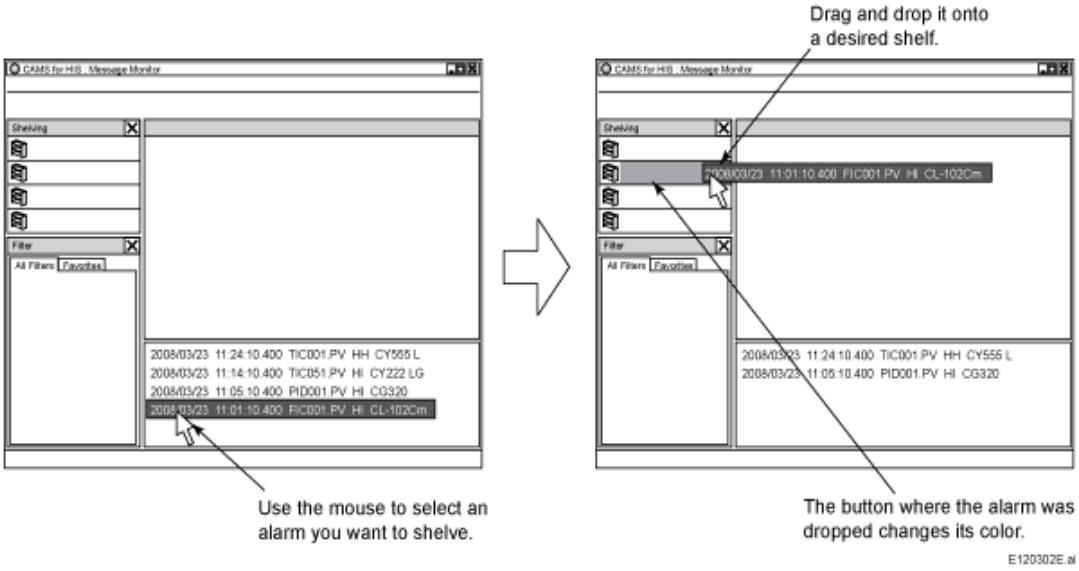


Figure: Shelving Start Operation

The following explains the operation to start each type of shelving.

•Continuous Shelving
Select an A&E message you want to shelve, and then drag and drop it onto a button of Continuous attribute.

•One-Shot Shelving
Select an A&E message you want to shelve, and then drag and drop it onto a button of One-Shot attribute. When A&E messages are displayed in a tree, if you select a desired message at the top of the tree and then drag and drop it onto the desired button, all A&E messages under the selected message will be shelved.

•Auto-Shelving
In the Filter pane, select a filter condition meeting the desired shelving purpose, and then drag and drop the condition onto a button of Auto attribute. All A&E messages matching the specified filter condition will be specified as the target of shelving. All new A&E messages matching the filter condition will also be shelved.

Moreover, after selecting the A&E messages for shelving, or select the filter for shelving, choose [Operation] - [Shelve] from menu bar and then choose a name of shelf from the list of shelves.

Resetting Shelving

The following explains the operation to reset shelving.

1.Select the shelf icon associated with the shelving you want to reset.

2.Select an A&E message that you want to remove from the shelf, and then click the [Clear Shelf] button in the toolbar or choose [Operation] - [Reset Shelf] from the menu bar. Or drag and drop the message to a filter area.

However, if an A&E message stays on the shelf for too long and becomes timeout, the message will be automatically excluded from the shelving. If the same A&E message occurs, the message will no longer be shelved.

Timeout Notification for Shelved Alarms

If a timeout occurs for any shelved A&E message, the applicable shelf icon will change to the alarm clock to notify the operator that shelf contains a timeout message. When the applicable shelf icon is selected to display the content of the shelf in the A&E Messages pane, you will see an alarm clock icon at the beginning of the timeout A&E message.

Figure: Alarm Clock Icon of the Timeout A&E Message

Extent of Shelving

The entire system or an individual user can be selected as the extent of shelving in CAMS for HIS. However, this setting needs to be uniform within the Equalization Scope.

The following explains different extents of shelving.

•SYSTEM

Shelving applies to the entire system. Shelved A&E messages are also shelved in all Message Monitor of CAMS for HISs within the same system.

•USER

Shelving applies to the Message Monitor of CAMS for HIS associated with the same HIS logon user. Shelved A&E messages are also shelved in all Message Monitor of CAMS for HIS associated with the same HIS logon user.

19.8. Filtering

Selects A&E messages that meet the criteria you specify.

Display of Filtered Alarms

Information of filtered alarms is shown next to the selected filter name (or below the filter name in the Favorites tab).
A display example of filtered alarms is shown below.

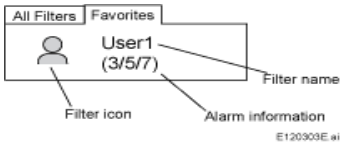


Figure: Filtered Alarms

The alarm information shown when filtering is enabled includes, from the left, the number of A&E messages currently present, number of unacknowledged A&E messages, and total number of A&E messages.
When an active filter icon is selected, the filtered A&E messages will be shown in the A&E Messages pane.

Starting Filtering

Select a desired filter icon to start filtering.

Activation of Filters

The filters of CAMS for HIS are functioning only on the CAMS for HIS message monitor that started the filters. The filters will no longer function after switching HIS users.

Display Formats of the Filters Pane

The Filters pane can be displayed in two formats: one in which all filter conditions are shown in a tree, and the other in which frequently used filter conditions are selected and shown in a list. You can switch between these two display formats using the corresponding tabs.
•All Filters tab: Tree format
•Favorites tab: List format

The following illustrates how the Filter pane display is switched.

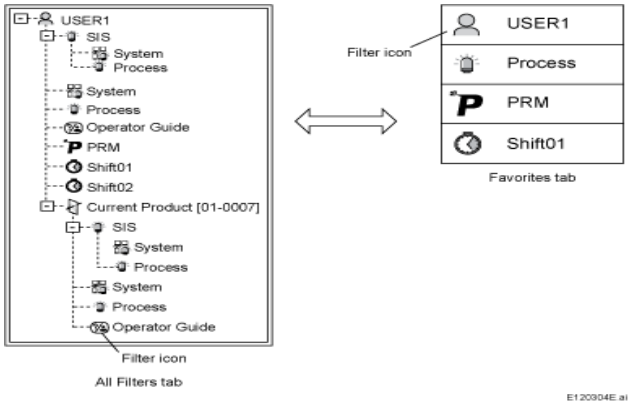


Figure: Switching of Filter Pane Display

In both formats, a filter condition is indicated by an icon and a filter name. The icons shown in this pane are called “filter icons.”
Among all filter icons, the icon shown at the beginning of the tree (root) is called the “user icon.” When a user icon is selected, all A&E messages that can be viewed by the user of the applicable Message Monitor of CAMS for HIS will be shown in the A&E Messages pane. The Filter pane will open in the tree format by default, where the user icon is already selected.

19.9. Dynamic Filtering

Dynamic Filtering lets you screen alarms by combining multiple filter conditions, to make it easier to recognize desired A&E messages.

Display of the Dynamic Filter Pane

The Message Monitor of CAMS for HIS showing the Dynamic Filter Pane is illustrated below.

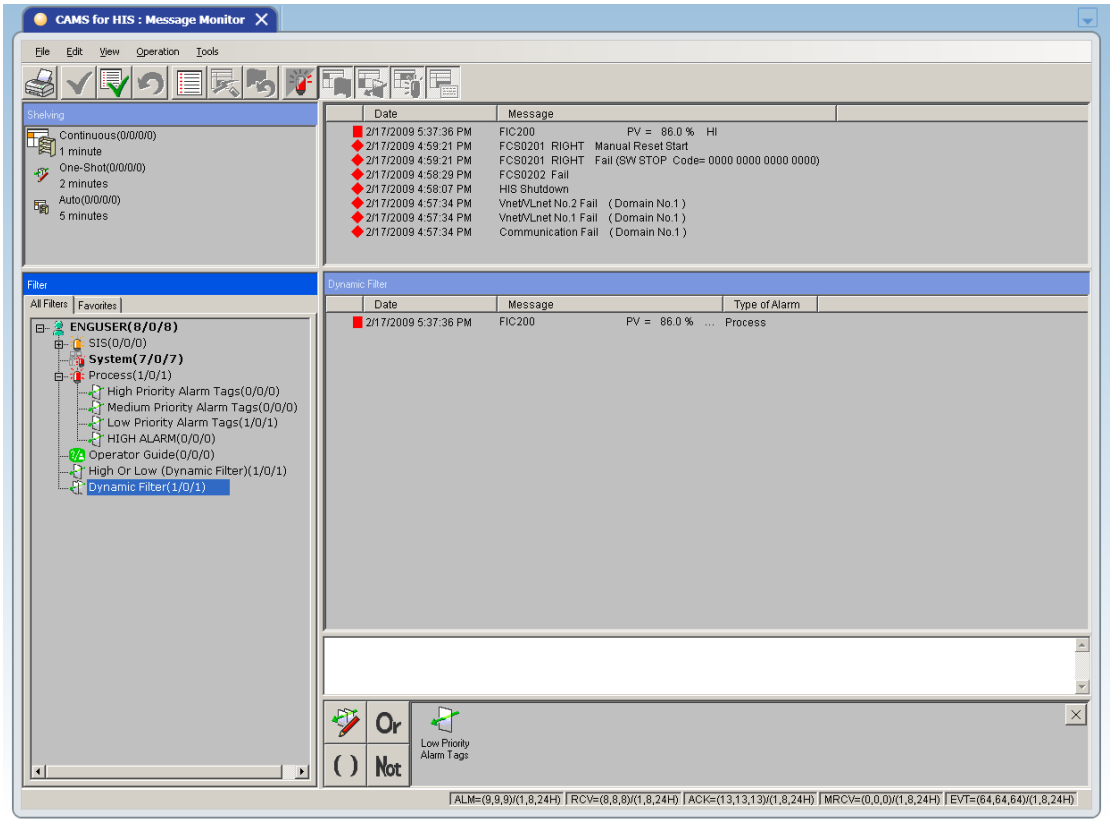


Figure: Message Monitor of CAMS for HIS Showing the Dynamic Filter Pane

Starting Dynamic Filtering

To start dynamic filtering, select multiple filter icons in the Filter pane, arrange them in the Dynamic Filter pane, and then define operators to connect the filter icons. However, the filters that use Batch ID as criterion are not subject to Dynamic Filtering.
The specific operation is explained below.
1.Select a filter icon in the Filter pane, and then drag it to near the status bar.
The Dynamic Filter pane appears at the bottom of the Details pane.
2.Drop the filter icon into the Dynamic Filter pane.

By following the same steps, drag and drop all desired filter conditions.

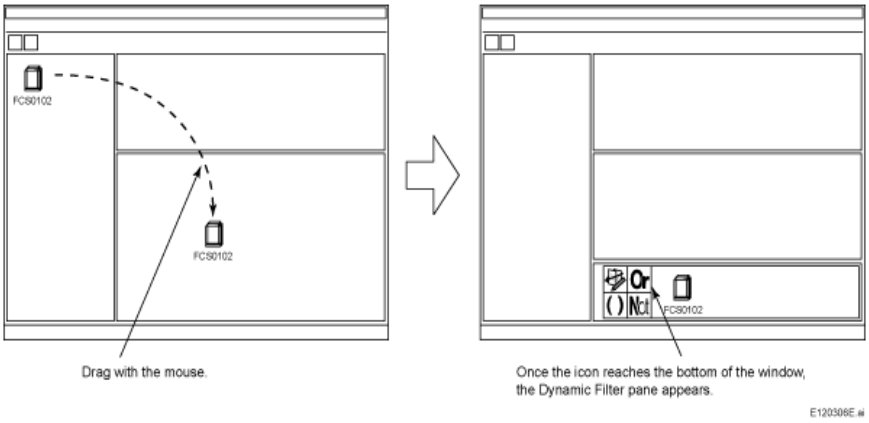


Figure: Operation to Start Dynamic Filtering - Select a Filter Conditions

3.Drag and drop the icons to define the operators connecting the filter icons.
Filter rules are defined.

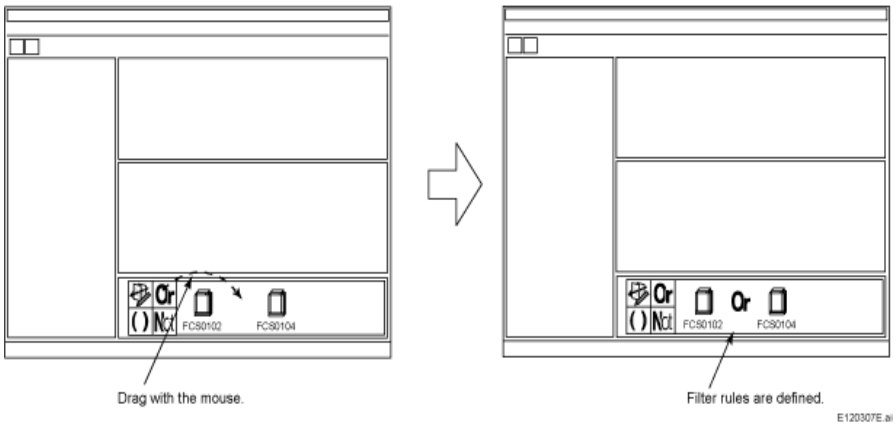


Figure: Operation to Start Dynamic Filtering - Filter Rules Definition

4.To register the defined Filter rules as a new filter condition, click the [Set Filter Rules] button.

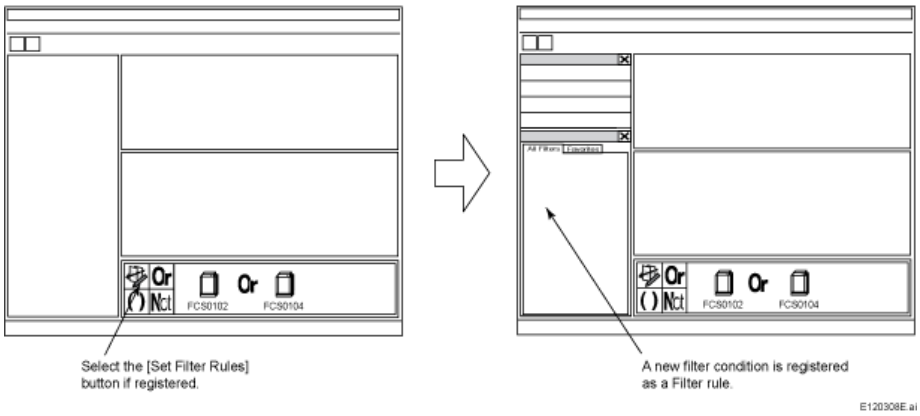


Figure: Filter Rules Setting

Closing the Dynamic Filter pane also clears the filter rules.

Setting Operators in the Dynamic Filter Pane
The following explains the operation that can be set in the Dynamic Filters pane.

Drag and drop this icon onto the Dynamic Filter pane to define an OR operator among the filter conditions.

Drag and drop this icon onto the Dynamic Filter pane to define a NOT operator.

Drag and drop this icon onto the Dynamic Filter pane to define parentheses. The positions of parentheses are adjustable.

Click this button to register the Filter rules you have defined in the Dynamic Filter pane, to the Filters pane.
If no operator is dragged and dropped, the filter conditions will be connected by an AND operator.

19.10. Suppression

Suppression is a general term for the functions provided by CAMS for HIS to suppress A&E messages. Suppressing unnecessary A&E messages makes it easier for operators to recognize the more important A&E messages.

Suppression in CAMS for HIS
Suppressible processing and A&E messages are listed below.
•Show Alarm Tree (Eclipsing): Displays the related A&E messages in a tree structure.
•Obvious messages:
Suppresses the A&E messages of the specified stations or alarm groups.
•Chattering messages:
Suppresses the repeated A&E messages after displaying the first 10 messages.

Suppression Processing–Obvious Messages
The A&E messages of specified stations and alarm groups will be suppressed so as not to be displayed on the CAMS for HIS message monitor. The suppressed A&E messages cannot be displayed anymore. However, the messages displayed before the suppression of an alarm will not be removed from the display after the alarm is specified for suppression.
The stations and alarm groups subject to suppression can be found on the Suppression dialog box. Choose [View] - [Suppression...] from the menu bar on the message monitor of CAMS for HIS, or click [Suppression...] button on the toolbar. The Suppression dialog box will appear. The suppressed stations and alarm groups displayed on the Suppression dialog box are marked as “Suppressed” in the [Status] column.
The Suppression dialog box is shown below.

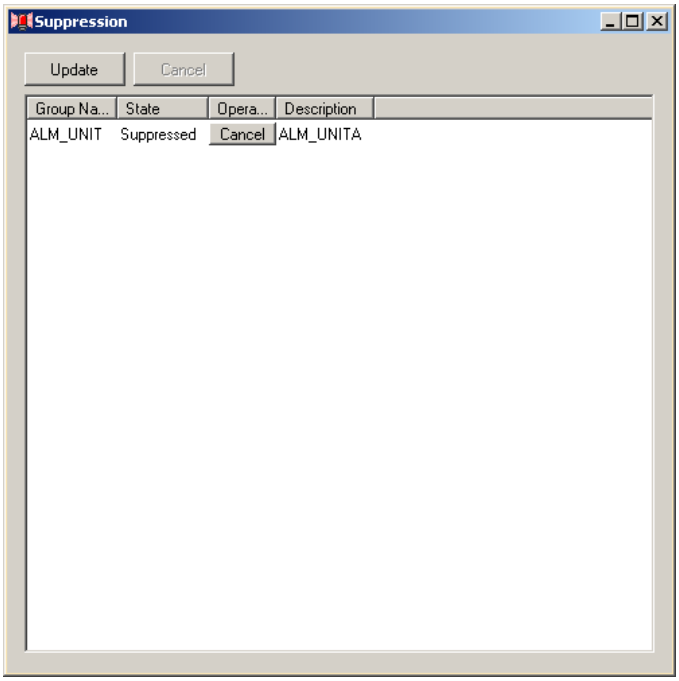


Figure: Suppression Dialog Box

The details of the setting items are as follows:
•[Modify]:
Clicking this button will update the display on the Suppression dialog box. Since the Suppression dialog box is not updated automatically, it is necessary to click this button when checking the latest information.

•[Cancel]:
Clicking this button will stop updating the display on the Suppression dialog box.

•[Group]:
Shows the names of the groups or stations subject to suppression.

•[Status]:
The groups undergoing the suppression are marked as Suppresses.

•[On/Off]:
Clicking the Off button will release the suppressed group from the suppression.

•[Description]:
Displays the descriptions on the suppressed alarm group. For the field control station, the comment text defined on the builder for the FCS will be displayed. The description for the alarm group cannot be modified.

Enable Alarm Suppression
Using the touch targets, push buttons or soft keys in the graphic view can enable suppression. Click an above described object and enter the command script for enabling suppression. The command script to be assigned to the object for enabling the alarm suppression is shown as follows. Where the GroupName argument should be specified with the name of an alarm group or a station that the alarms need to be suppressed.
(CENTUM VPInstalledFolder)\program\ BKHCAMS_SON.exeΔGroupName
Δ: Space character

Disable Alarm Suppression
There are two ways to disable the alarm suppression:
•Disabling the suppression on HIS graphic view.

Using the touch targets, push buttons or soft keys in the graphic view can disable suppression. Click an above described object and enter the command script for disabling suppression. The command script to be assigned to the object for disabling the alarm suppression is shown as follows. Where the GroupName argument should be specified with the name of an alarm group or a station that the alarms suppression need to be released.
(CENTUM VPInstalledFolder)\program\ BKHCAMS_SOF.exeΔGroupName
Δ: Space character
•Disabling Alarm Suppression on Message Monitor of CAMS for HIS
Open the Suppression dialog box; click the Off button in the On/Off field of the corresponding alarm group.

Affects of Alarm Suppression
The alarm suppression of CAMS for HIS will affect all the alarms of equalization scope and the alarms handled by the Message Monitor of CAMS for HIS regardless the operator (user) privilege.

19.11. Customizing the Message Monitor of CAMS for HIS

The Message Monitor of CAMS for HIS is customizable to the extent allowed by the Configurator of CAMS for HIS for each user.

Window for Customizing the Message Monitor of CAMS for HIS
To customize (i.e., change the settings of) the Message Monitor of CAMS for HIS, open Option window from the Message Monitor of CAMS for HIS:
From the menu bar for the Message Monitor of CAMS for HIS, select [Tools] and [Options]. Option window appears.
The Option window contains the following tabs:
•General tab
•Toolbar tab
•Status Bar tab
•Shelves Pane tab
•Filter Pane tab
•A&E Browser Pane tab
•A&E Messages Pane tab
•Dynamic Filters Pane tab
•Print tab

Buttons Common on All Tabs
The following buttons are common on all the tabs.

•[Reset to System Default] Button
Clicking this button will revert the settings on the Option window to the default settings.

After clicking this button, the default settings will not be kept unless the [Apply] or [OK] button is clicked.

•[Apply] Button
Clicking this button will save the modified contents of all the tabs. After clicking this button, the contents prior to the modification can no longer be reverted. However, if the contents on the tabs are unchanged, the [Apply] button will be displayed as shaded (grayed).

•[OK] Button
Saves the modified contents and exits.

•[Cancel] Button
Exits without saving the modified contents.

19.12. Customizing General items on Message Monitor of CAMS for HIS

To customize General items on the Message Monitor of CAMS for HIS, click the General tab in the Option window and do the settings.

General Tab in the Option Window
The figure below shows the General tab in Option window.

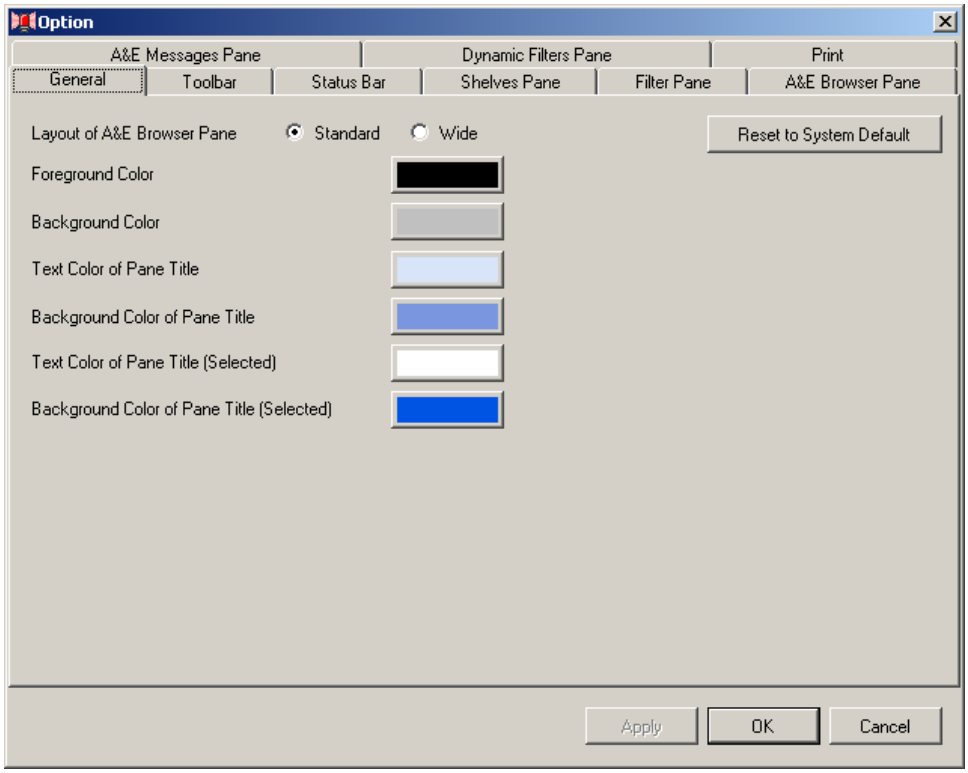


Figure: General Tab in Option Window

General Settings of the Message Monitor of CAMS for HIS
The general setting items relating to the Message Monitor of CAMS for HIS are shown below.

Table: General Setting Items for the Message Monitor of CAMS for HIS

Setting Item	Description	
Layout of A&E Browser Pane	Set whether to show the A&E Browser pane beside or above the Shelves pane in the Message Monitor of CAMS for HIS. If the layout change of the Message Monitor of CAMS for HIS is not allowed, the layout cannot be changed by the operator. [Change Window Layout] button in the toolbar is grayed out and cannot be selected.	
	Standard	The A&E Browser pane is shown beside the Shelves pane.
	Wide	The A&E Browser pane is shown above the Shelves pane.
Foreground Color	Set the color of texts in All Filters tab in the Filter Pane. The setting made here is followed unless otherwise specified for this pane.	
Background Color	Set the color of background in All Filters tab in the Filter Pane. The setting made here is followed unless otherwise specified for this pane.	
Text Color of Pane Title	Set the text color to be applied to the title name of each pane in the Message Monitor of CAMS for HIS.	
Background Color of Pane Title	Set the background color to be applied to the title name of each pane in the Message Monitor of CAMS for HIS.	
Text Color of Pane Title (Selected)	Set the color of title name texts in each pane when one of the items in the pane is selected.	
Background Color of Pane Title (Selected)	Set the color of title name background in each pane when one of the items in the pane is selected.	

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20. HISTORICAL VIEWER OF CAMS FOR HIS

The Historical Viewer of CAMS for HIS displays the past A&E messages and operation records of operators on the window for the historical data list, that CAMS for HIS keeps. The operation records include not only the HIS operations but also the operations performed from the Message Monitor of CAMS for HIS.
The window appearance and the window operation of Historical Viewer of CAMS for HIS are similar to the Message Monitor of CAMS for HIS besides some specific features of Historical Viewer of CAMS for HIS.

20.1. Main Window of Historical Viewer of CAMS for HIS

The main window of Historical Viewer of CAMS for HIS is shown as follows:

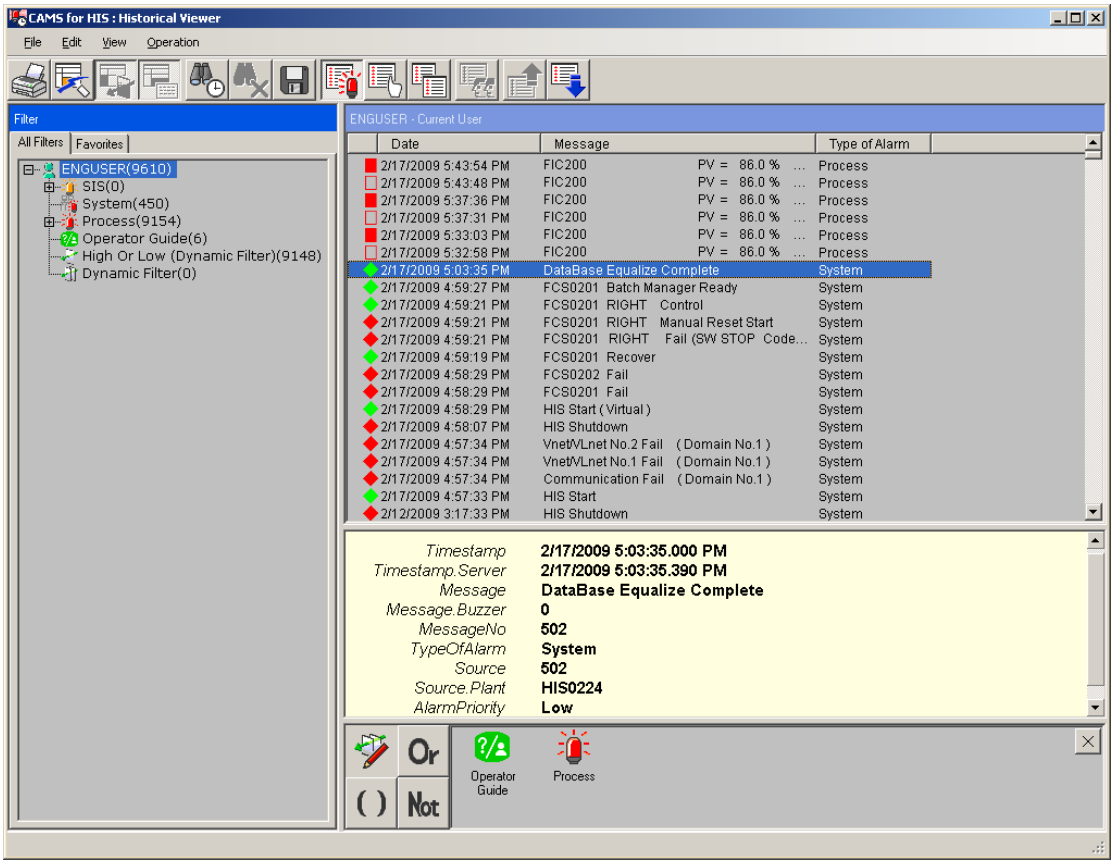

Figure : Main Window of Historical Viewer of CAMS for HIS

20.2. Specification of Historical Viewer of CAMS for HIS

The specification of Historical Viewer of CAMS for HIS is as follows:
•Up to 10000 messages can be displayed.

•The shelves cannot be applied to the historical messages. The historical messages are listed in the Historical Messages pane as the historical report.

•When a Historical Viewer of CAMS for HIS is started, it uses the same display style of the Message Monitor of CAMS for HIS in the same HIS. The display style of Historical Viewer cannot be defined on Configurator of CAMS for HIS.

•The CurrentProduct [Batch ID] filters created on the Message Monitor of CAMS for HIS cannot be inherited.

20.3. Categories of Historical Data on Historical Viewer of CAMS for HIS

On Historical Viewer of CAMS for HIS, the historical data are handled in three categories. The historical data of the three categories can be displayed by selecting the menu items in the menu bar or clicking the respective buttons on toolbar. The details are as follows:

Alarm
All the alarms displayed on the Message Monitor of CAMS for HIS belong to this category including the alarm-off (AOF) and suppressed alarm messages. Some of the messages belong to the Alarm category may not be displayed in the Message Monitor of CAMS for HIS.

Operation Record
All the operations recorded on the HIS Historical Message Report window and on the Message Monitor of CAMS for HIS belong to this category.

Event
All the messages not belong to the Alarm and Operation Record categories belong to Event category.

Historical Data Displayed on Historical Viewer of CAMS for HIS
Not only the A&E messages of the plant control and status can be displayed on the Historical Viewer of CAMS for HIS but also the events and the records of the operations on the CAMS for HIS. Therefore, some A&E messages displayed on the Historical Viewer of CAMS for HIS are not available on the legacy CENTUM VP alarm view.
Events and records specific to CAMS for HIS displayed on the Historical Viewer are as follows.

Historical Data of Events and Records of Operations on CAMS for HIS
•Operations of CAMS for HIS: Acknowledgment (Ack), Manual reset, Suppressing, Shelving, Committing changes, downloading and so on

•System alarm messages generated from CAMS for HIS are the messages regarding equalization scope and the alarm buffer capacity.

A&E Messages Obtained Through OPC A&E Sever
•PRM A&E Messages: Device Alarm, PAS Alarm, Diagnosis Alarm

•STARDOM A&E Messages: System Alarm/Event Messages, Application Alarm/Event Messages

Historical Data Cannot be Displayed on Historical Viewer of CAMS for HIS
The alarms not detected by CAMS for HIS in accordance with the settings on the Alarm Details tab and the Alarm List tab of CAMS for HIS Configurator will not be displayed on the Historical Viewer of CAMS for HIS.

20.4. Open or Close Historical Viewer of CAMS for HIS

On one HIS, only one Historical View of CAMS for HIS can be opened.
There are two ways to start the Historical Viewer of CAMS for HIS.

From Browser Bar
When calling the Historical Message Report window from [Call View] of Tool Button Tool Box on Browser bar, the Historical Viewer of CAMS for HIS can be displayed.
At the first time starting the Historical Viewer of CAMS for HIS, only the latest alarm messages are displayed. From the second time, the previously historical messages resulted from the previous search will also be displayed.

By Assigning a Window Call Object
The Historical Message Report window can also be called by assigning a Touch Target on Product Control view. Using a Batch ID as criterion, the Historical Viewer of CAMS for HIS can be displayed instead of the Historical Message Report window.
When starting Historical Viewer of CAMS for HIS from the Product Control view, a filter will be automatically created using Bacth ID as criterion. The filtered result will be displayed in the A&E Historical Messages pane.

Close Historical Viewer of CAMS for HIS
How to close the Historical Viewer of CAMS for HIS is as follows:
•Click the Close button of Historical Viewer of CAMS for HIS.
•Choose [File] - [Exit] from the menu bar of Historical Viewer of CAMS for HIS.
•Run User-In or User-Out.
•Press [ERAS] function key on the Operation Keyboard.

20.5. Layout of Historical Viewer of CAMS for HIS

The layout of Historical Viewer of CAMS for HIS is similar to the layout of the Message Monitor of CAMS for HIS. The detailed items that specific to the Historical Viewer of CAMS for HIS will be explained below.

Main Window
The window panes of the Message Monitor of CAMS for HIS will be displayed in the Historical Viewer of CAMS for HIS. When the Message Monitor is customized to a different layout, the Historical Viewer will be changed to the same. The display style of Historical Viewer cannot be directly customized.

The figure below shows the appearance of the Historical Viewer of CAMS for HIS.

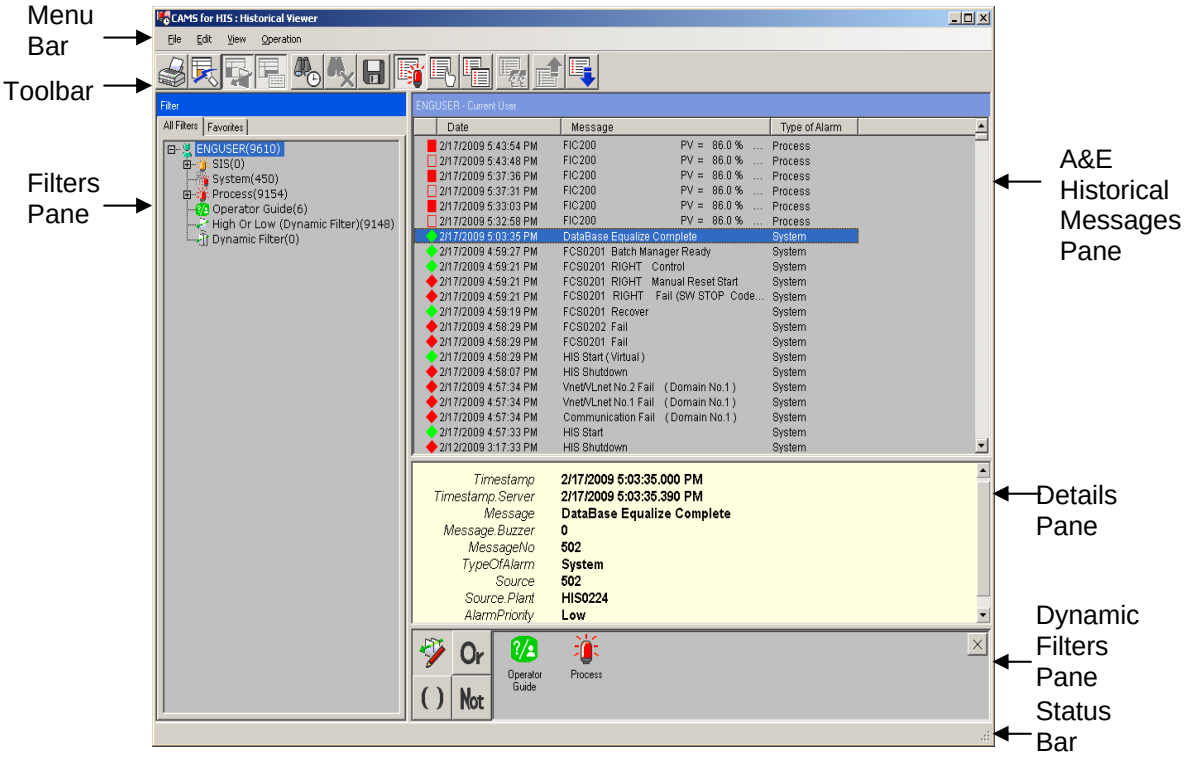

Figure: Appearance of the Historical Viewer of CAMS for HIS

Menu Bar
Operations available in the Historical Viewer of CAMS for HIS can be selected using the menu items in the menu bar. A list of menu items is shown below.

Table: Menu Items of Historical Viewer of CAMS for HIS

Menu		Description
File		
	Properties	Displays the properties of filter.
	Export...	Exports the historical data in the Historical Messages pane to a CSV file.
	Print...	Prints the displayed screen image.
	Exit	Exits the Historical Viewer of CAMS for HIS.
Edit		
	Search	Opens a dialog box to setup the searching criteria for searching the historical data.
	Stop Searching	Stops searching.
View		
	Filter Pane	Shows or hides the Filter pane.
	Details Pane	Show or hide the Details pane.
	Alarm	Displays alarm messages. When open the Historical Viewer of CAMS for HIS, this filter is selected and the alarm messages are displayed.
	Operation log	Displays the operation records.
	Event	Displays events.
	Operation log of other users	Displays the operation records of other users of the HISs within the equalization scope.
	Next	Forwards the display on the Historical Messages pane towards the later records according to the timestamps. This will scroll the half of the displayed contents in the Historical Messages pane.
	Previous	Backwards the display on the Historical Messages pane towards the earlier records according to the timestamps. This will scroll the half of the displayed contents in the Historical Messages pane.
Operation		
	Clear Details Pane	Deselects the selected A&E messages and clears the contents in Details pane.

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Toolbar
Contains the valid buttons for the Historical Viewer among the buttons on the toolbar of the Message Monitor of CAMS for HIS, and the buttons specific to the Historical Viewer of CAMS for HIS.

A display of this toolbar is shown as follows:

Figure: A Display of Buttons on Toolbar of Historical Viewer of CAMS for HIS (Default)

The details of the buttons specific to the Historical Viewer of CAMS for HIS are explained as follows:


Print: Prints the contents displayed in the Historical Messages pane.


Clear Details Pane: Deselects the selected historical data and clear the contents in the Details pane.


Show Filter Pane: Toggles to show or hide the filter pane by a click.


Show Details Pane: Toggles to show or hide the details pane by a click.


Display the search dialog box: Opens a dialog box to setup the searching criteria for searching the historical data.


Stop the search of Alarm: Stops searching.


Export the Alarm in CSV format: Exports the historical data in the Historical Messages pane to a CSV file.


Switch Display/Hide the Alarm: Displays alarm messages. When open the Historical Viewer of CAMS for HIS, this filter is selected and the alarm messages are displayed. The Alarm can be shown or hidden by a click.

Switch Display/Hide the operation Record: Displays the operation records. The displayed operation record can be shown or hidden by a click.

Switch Display/Hide the Event: Displays events. The displayed event can be shown or hidden by a click.

Display the operation Records of Other Users: Displays the operation records of all users of the HISs within the equalization scope. The displayed operation records can be shown or hidden by a click.

Previous: Backwards the display on the Historical Messages pane towards the earlier records according to the timestamps. This will scroll the half of the displayed contents in the Historical Messages pane. This button becomes valid when the displayed data in the Historical Messages pane are more than one page can hold.

Next: Forwards the display on the Historical Messages pane towards the later records according to the timestamps. This will scroll the half of the displayed contents in the Historical Messages pane. This button becomes valid when the displayed data in the Historical Messages pane are more than one page can hold.

Filter Pane

The main features of Filter pane are the same as in Message Monitor of CAMS for HIS. The features specific to the Filter pane of Historical Viewer of CAMS for HIS are as follows:

•When started, the root of the tree is always selected.

•When the filter pane is running, the historical data of filter name, filter icon (*1) and the total number of filtered historical data (*1) will be displayed.

•Icon blinking or emphases cannot be applied to the on unread alarms.

•Load Shedding cannot be set.

•On the context menu, only [Properties] is available.

*1: The filter icon and the total number of filtered historical data are displayed only when they are defined to be displayed on the Message Monitor of CAMS for HIS.

Historical Messages pane
The historical data are displayed in this pane. One record takes one line.
The features specific to the Historical Messages pane of the Historical Viewer of CAMS for HIS are as follows:
•On title bar, the times specified in the searching criteria are displayed.

•The historical date cannot be eclipsed (by clicking Show Data Tree).

•Icon blinking or Emphases cannot be applied to the unread alarms.

•No context menu. Moreover, double clicking will not run the assigned tasks.

Details Pane
When selecting a record in the Historical Messages pane, the attributes of the corresponding historical record will be displayed. The displayed attributes are stored in the following file.
(CENTUM VP Installed Folder)\CAMS\database\Style\alarm-list.csv

User can define a user file. The user-defined file will be stored in the following path:
(CENTUM VP Installed Folder)\CAMS\database\Client\Config\<UserID>\alarm-list.csv

When choosing [Clear Details Pane] from menu bar or clicking [Clear Details Pane] on the toolbar, the data displayed in the Historical Messages pane will be cleared and the report pane will show its background color. For the records that do not have attribute, the above operations will not show anything. Moreover, those records do not have memorandums either.

Dynamic Filter Pane
The main features of Dynamic Filter pane are the same as in Message Monitor of CAMS for HIS. However, the button for registering filters is not valid.

Status Bar
On the Status bar, the following items are indicated:
•Help Messages: The simple descriptions about the menu items and buttons of the toolbar are displayed as the help messages.

•Progress Bar: The progress of search the historical data is indicated by this progress bar.

•Search Criterion: When the filter is running, the searching criterion is displayed.

20.6. Specification of Historical Data Display

The detailed specification of historical data display will be explained below.

Style of Historical Messages pane
The historical data are displayed in the Historical Messages pane. If the historical data contain too many records that cannot be displayed in one page, the pane can be scrolled. Among the historical data, the Alarm, the Operation Record and Event can be separately displayed or can be displayed together. For easily identify the different messages, the marks are placed at the beginning of each message of Operation Records and Events. The name of the marks for Operation Records and Events are different. The names are as follows:


Figure: Mark for Operation Record

Figure: Mark for Event

Moreover, in the Historical Viewer of CAMS for HIS, the suppressed A&E messages are displayed and the suppression marks are displayed at the beginning of the suppressed A&E messages. The exclamation marks are displayed at the beginning of repeating alarms. If a repeating alarm is also a suppressed alarm, the suppression mark will take precedence.


Figure: Suppression Mark

Historical Data Display and User Privilege (User Right)
Among the historical records, the alarm display is restricted by the privilege of the user that logon the HIS. The operations records and events are not restricted so that all the operation records and events of all users within the equalization scope of the HIS will be displayed. However, some of the system alarm messages such as FCS start or FCS stop will be displayed on for the users with proper privileges.

Operation Records in Historical Data Display
The operation records for the operations on HIS and for the operations on CAMS for HIS are displayed differently. The instances are as follows.

Operation Record of Operations on HIS
An operation record for the operation on HIS contains the information of the operator. An example of an operation record for the operation on HIS is as follows:

Table: Operation Record for the Operation on HIS

Type	Operation	Message Display
System Operation	Copy ALL Programs of FCS	FCS0101 All Program Copy Operation [ONUSER@HIS0124]
Process Operation	Change Block Mode	FIC001-1 Distillation Tower -1 Inlet Flow MAN old=CAS [ONUSER@HIS0124]

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Operation Record of Operations on CAMS for HIS

The operation records for the operations on CAMS for HIS vary with different type of operations. The recorded operations on CAMS for HIS are as follows:

Table: Recorded Operations on CAMS for HIS

Operated Window	Operation	Instance	Remarks
Operation on Message Monitor of CAMS for HIS	Ack	Acknowledge, Acknowledge All	
	Manual Reset	Manual Reset, Manual Reset All	
	Suppression	• Release suppression on Suppression dialog box. • Apply or release suppression on the Suppression dialog box during function check. • Run Suppress command.	
	Shelving	Drop an A&E message to Continuous Shelf or One-Shot Shelf.	
	Resetting Shelving	• Reset Continuous Shelf or One-Shot Shelf when alarms are shelved in the shelves. • Drag an A&E message from Continuous Shelf or One-Shot Shelf and drop to filter pane.	When resetting Continuous Shelf or One-Shot Shelf, resetting the shelf itself will be logged, and this will be followed by the events of removing all the A&E messages from the shelf.
	Clear Shelf	Clear Continuous Shelf or One-Shot Shelf.	
	AutoShelf	Drop the records to Auto Shelf according the filter.	
	Reset AutoShelf	Reset Auto-Shelving	
	Commit Changes	Save the settings for the Message Monitor of CAMS for HIS.	
Operations on Configurator of CAMS for HIS	Downloading	Download the change settings defined on the configurator of CAMS for HIS.	

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The operation records for the operations on the CAMS for HIS are displayed with the attributes of the A&E messages. Therefore, the operation records can be displayed together with alarms and events. The operation records for the operations on the CAMS for HIS for HIS are shown as follows:

Table: Operation Records for the Operations on the CAMS for HIS

Operation	Attribute Timestamp Timestamp.Server Timestamp.Source	Attribute HisUserName	Attribute HisStnName	Message Display
Ack	Time	User	HIS	Ack:User(ONUSER@HIS0124):PairKey
Manual Reset	Time	User	HIS	ManualRecover:User(ONUSER@HIS0124): PairKey
Suppression	Time	User	HIS	SuppressionON:User(ONUSER@HIS0124): Group(Group Name)
		User	HIS	SuppressionOFF:User(ONUSER@HIS0124): Group(Group Name)
Shelving	Time	User	HIS	Shelving:User(ONUSER@HIS0124):PairKey: Shelf(Shelf Name):Timestamp
Resetting Shelving	Time	User	HIS	CancelShelving:User(ONUSER@HIS0124): PairKey:Timestamp
Clear Shelf	Time	User	HIS	ResetShelving:User(ONUSER@HIS0124): Shelf(Shelf Name)
AutoShelf	Time	User	HIS	AutoShelving:User(ONUSER@HIS0124): Filter(Filter Name)
Reset AutoShelf	Time	User	HIS	CancelAutoShelf:User(ONUSER@HIS0124)
Commit Changes	Send Time	User	HIS	Load: User (ONUSER@HIS0124): Version (version of database)
Downloading	Send Time	User	HIS	Load: User (ONUSER@HIS0124): Version (version of database)

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20.7. Search Historical Data

How to search the historical data on the Historical Viewer of CAMS for HIS.

Open Search Dialog Box
The criteria for searching historical data can be defined on the search dialog box. Choosing [Edit] - [Search] from menu bar or clicking [Display the search dialog box] button from the toolbar may open the search dialog box.
The setting items on the search dialog box are as follows:
•Date; All/ Specified date/Past
•Message Type; All/ Specify Message Type/ Specify Number (*OK)
•Occurrence Source; All/ Specify Occurrence Source
•User; All/ Specify User
•Arbitrary Character; No Check/ Check (* is available)
•Direction; Backward/ Forward
•Display; All/ Search

A search dialog box is shown below.

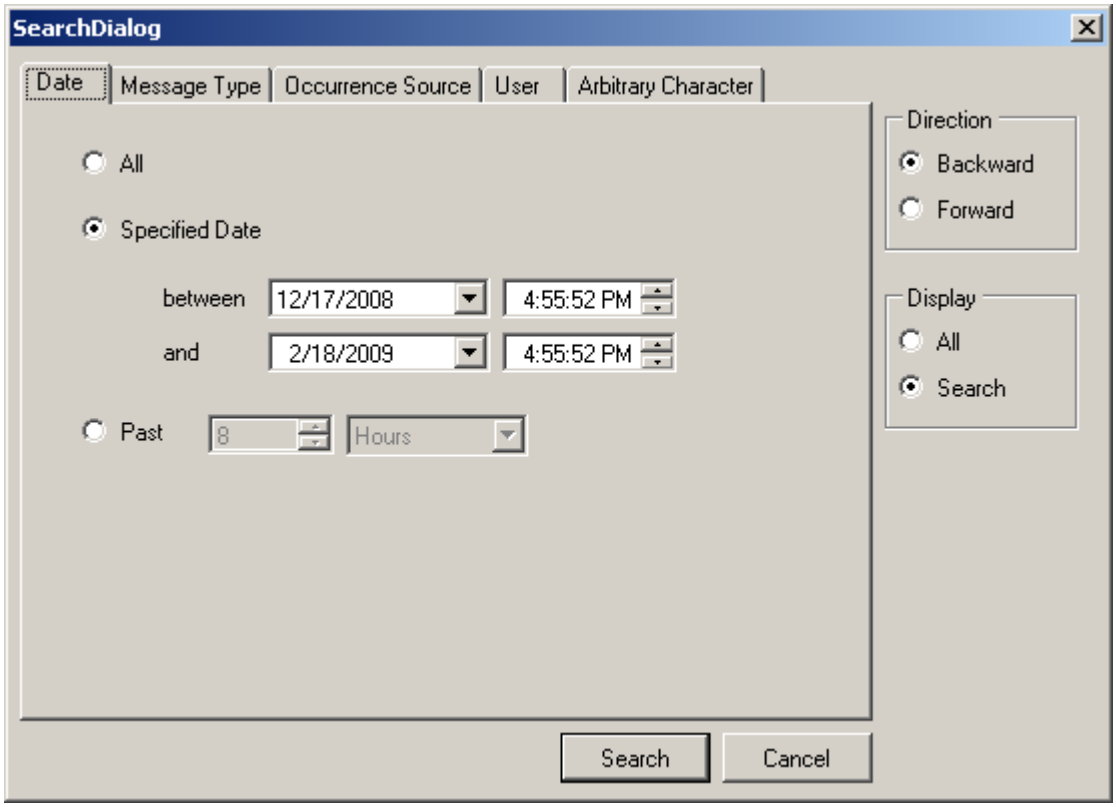

Figure: Search Dialog Box of Historical Viewer of CAMS for HIS

The criteria and setting items on the search dialog box can be defined in the same way as searching the historical messages on the HIS historical report window.

When starting Historical Viewer of CAMS for HIS from the Product Control View, a BatchID is automatically defined as the searching criterion.

Searching Range by Specifying Date
A searching range can be defined according to the specified date and time, or time range.

Search All A&E Messages Sent from PRM
On the Historical Viewer of CAMS for HIS, searching can be performed for the A&E messages sent from PRM through OPC A&E server. On the Message Type tab of Search dialog box, click the [Specify Message Type] radio button and then check the [Asset Messages] option box. When clicking the [Search] button, the PRM A&E messages or A&E messages categorized as Asset for the type of alarms can be searched.

Action of Other Panes During Searching
When searching starts, the selected messages in filter pane or in the Historical Messages pane will be deselected. The display in the filter pane will become the default display, i.e., the display as if the top filter is selected.
Clicking the [Cancel] button on the search dialog box, the search dialog box will be closed. And the selected messages in filter pane or in the Historical Messages pane will be unchanged.

If a Search Results in more than 10000 Matches
When a search resulted in more than 10000 matches, only 10000 matches can be displayed in one page of Historical Messages pane. Choosing [View] - [Next] or [View] - [Previous] will scroll the Historical Messages pane up or down for a half page. Thus 5000 messages either before or after will be displayed to replace half of the previously displayed messages.

When a search result in 10000 matches, the displayed and the skipped records are not consistent though 10000 records will be displayed. For an example, if the searching criterion is defined with a past period, the matches may be shown from the oldest to the newest. Consequently, the later parts of the historical data are discarded due to overflow.

Cannot Equalize Searching Criteria
The searching criteria of one HIS cannot be equalized to other HISs even though they are in the same equalization range. The searching criteria can only be defined in the HIS that running the Historical Viewer of CAMS for HIS and handled by that HIS only.

20.8. Filtering Historical Data

On the historical Viewer of CAMS for HIS, the filters can be used for filtering the historical data. The filters here are slightly different from the filters on the Message Monitor of CAMS for HIS. The main differences will be explained below.

Filtering

On the Historical Viewer, all the historical messages displayed in the Historical Messages pane can be filtered.
In the historical Messages pane, the alarms, operation records and events are separately displayed as the historical data.

Filter Properties

The properties sheet of a filter on Filter pane can be opened by following operations:
1.Choose a filter in the Filter pane, and then right click the mouse.
A context menu will be displayed.
2.Click Properties on the context menu.
The Properties sheet selected filter will be displayed.

A Properties sheet of a filter is shown as follows:

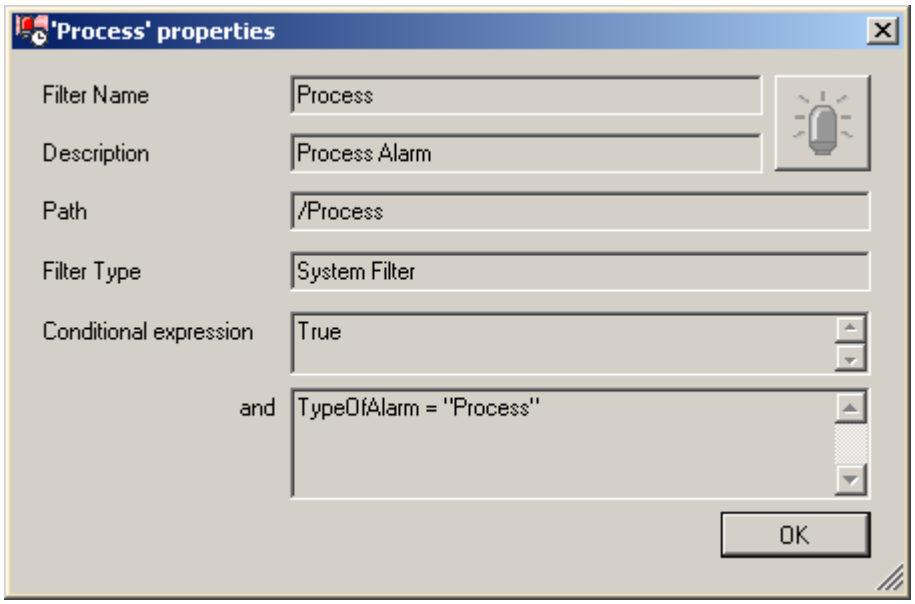

Figure : A Properties Sheet of a Filter

The Properties sheet of a filter on the Historical Viewer of CAMS for HIS is about the same with the filters on the Message Monitor of CAMS for HIS. The only difference is the properties sheet on Historical Viewer is not editable. Therefore, buttons for moving the filters or [Cancel] are not available.